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Notations

As presented in [Petit et al., 2001] for the Z12-T, the calibration of a geodetic system is divided in (up to) 6 different parts (Figure 1)

- X_P = Delay of the 1PPS-in with respect to the laboratory reference
- X_O = Delay of the “internal reference” with respect to the 1PPS-in

$(X_P + X_O) = \text{REFDLY.}$

- X_C = antenna cable delay
- $[X_D = \text{short cable} + \text{splitter delay}]$

$(X_C + X_D) = \text{CABDLY.}$ In practice, X_D is generally not used.

- X_R = receiver internal delay, measured from the “internal reference”
- X_S = antenna delay

$(X_R + X_S) = \text{INTDLY.}$

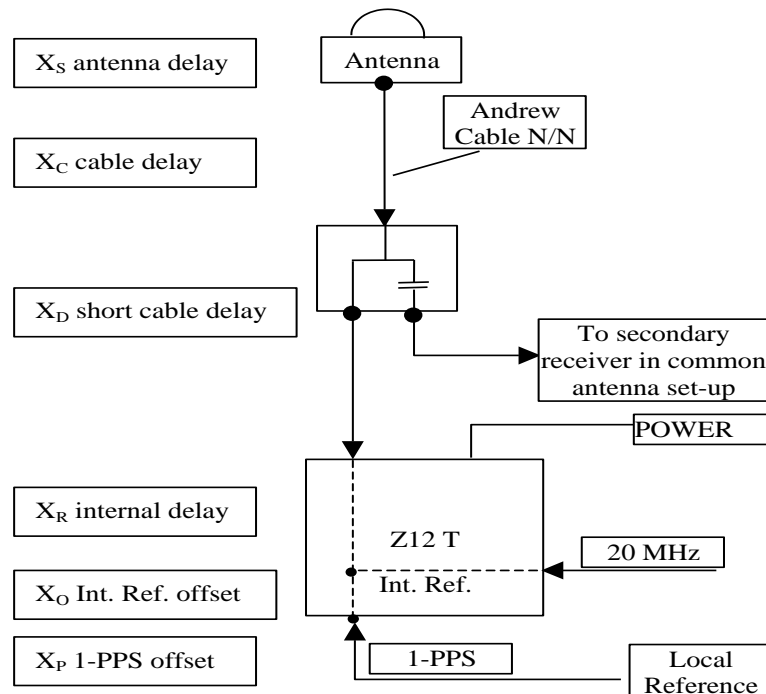


Figure 1: Definition of the different delays used in the most general set-up of a geodetic system (here shown for a Z12-T) from [Petit et al, 2001].

2/ Phase 2

Laboratories: BIPM, PTB, TL, NMIJ, NICT, NIM, ROA

2.1/ BIPM (13115)Period

MJD 56407 to 56412

Delays

All measurements at BIPM carried out by L. Tisserand.

Equipment used to measure internal delay of local receiver is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 4680, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

Equipment used to measure internal delay of traveling receivers is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 5482, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

BP0R:

$$X_O = 249.4 \text{ ns} \quad (274.4-33.7+8.7)$$

$$X_P = 33.2 \text{ ns} \quad (H1+BIPM9)$$

$$\text{REFDLY} = 282.6 \text{ ns}$$

$$\text{CABDLY} = X_C = 133.4 \text{ ns} \quad (C113)$$

BP0U:

$$\text{REFDLY} = X_P = 54.2 \text{ ns} \quad (B1+C166+BP1I+C153)$$

$$\text{CABDLY} = X_C = 182.0 \text{ ns} \quad (C134)$$

BP1C:

$$X_O = 183.1 \text{ ns} \quad (216.8-33.7)$$

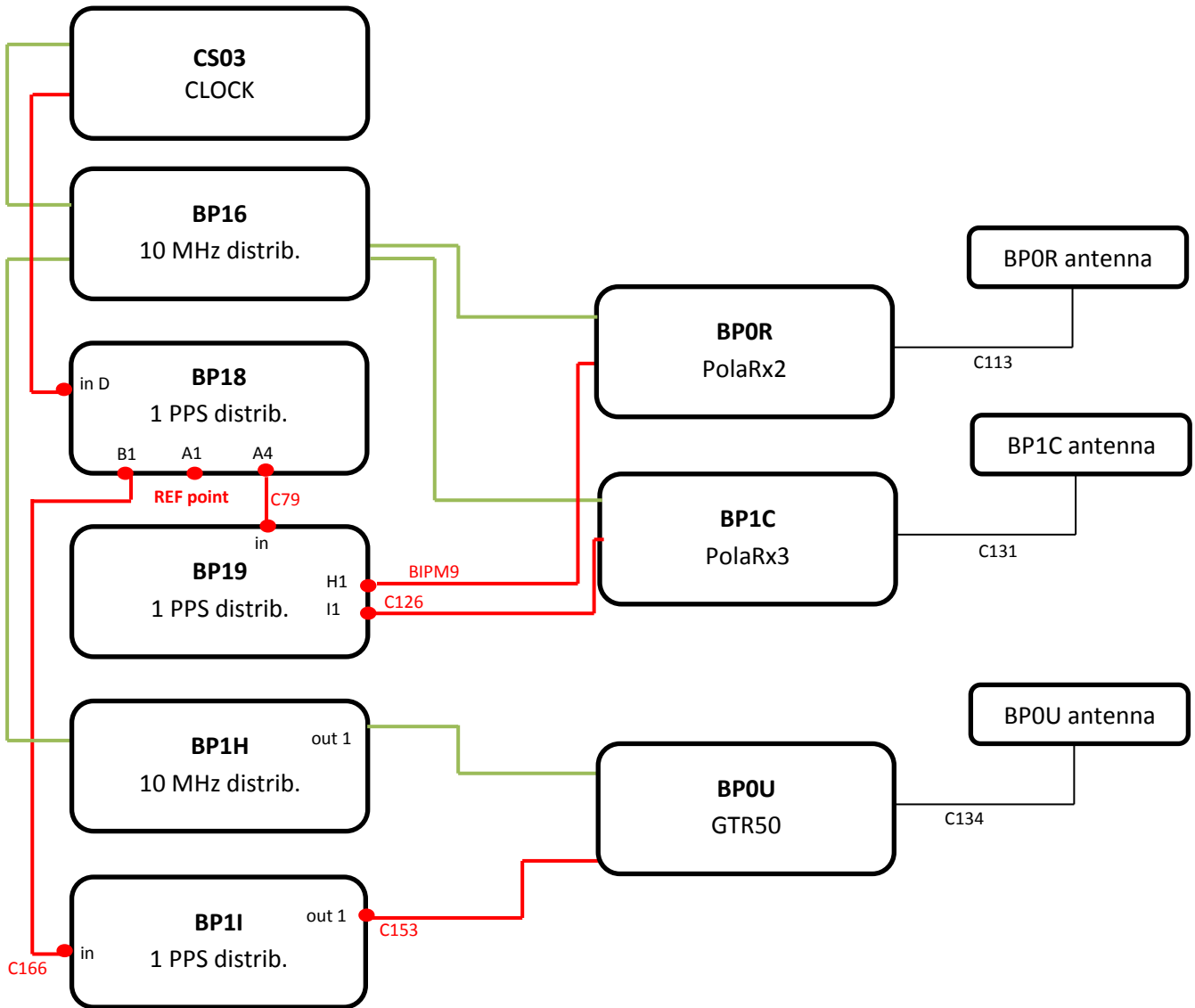
$$X_P = 33.5 \text{ ns} \quad (II+C126)$$

$$\text{REFDLY} = 261.6 \text{ ns}$$

$$\text{CABDLY} = X_C = 235.7 \text{ ns} \quad (C131)$$

Setup at the BIPM

1 PPS ————
 10 MHz ————



BP0U-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 66733
 Computed code bias (P1/P2)/m = -24.532 -23.608
 Computed baseline (X,Y,Z)/m = 3.882 2.885 -3.853
 RMS of residuals /m = 0.618

Number of phase differences to fit baseline = 62963
 A priori baseline (X,Y,Z)/m = 3.882 2.885 -3.853
 13088 clock jitters computed out of 13105 intervals
 AVE jitter /ps = -0.2 RMS jitter /ps = 29.1

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.116 0.016 0.184
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.123 0.018 0.194
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = 3.999 2.901 -3.668
 Final baseline L2 (X,Y,Z)/m = 4.005 2.903 -3.658

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 66762

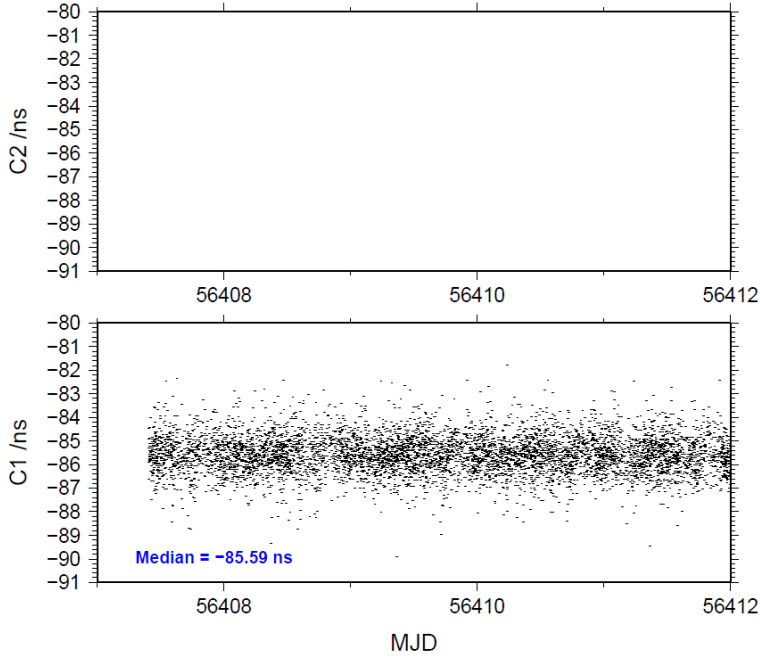
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 66702 -85.576 1.398
 C2: 0-NaN -NaN
 P1: 66673 -82.336 2.119
 P2: 66672 -79.282 2.292

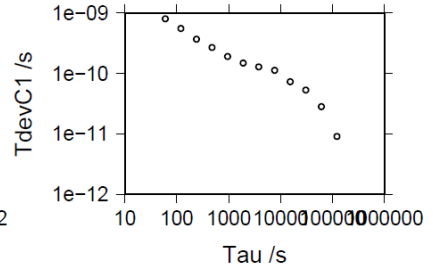
Number of 300s epochs in out file = 1325

Code #pts, median/ns, ave/ns, rms/ns
 C1: 6642 -85.590 -85.573 0.788
 C2: 0 0.000-NaN -NaN
 P1: 6640 -82.385 -82.355 1.188
 P2: 6640 -79.302 -79.274 1.358

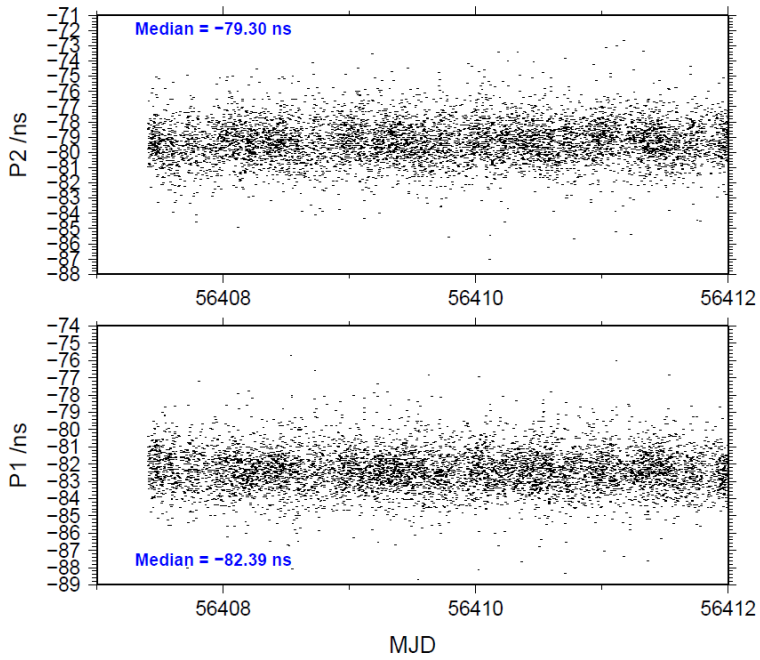
03/20/15 bp0ubp0r13115_5



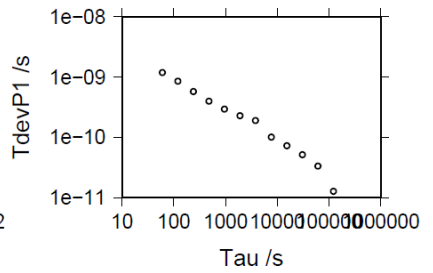
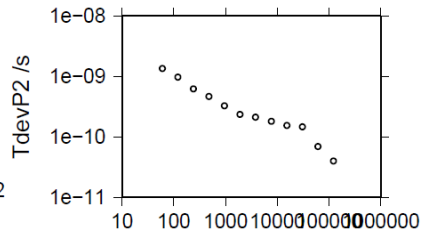
- 122491 s: C1= 9 ps
- 61246 s: C1= 28 ps
- 30623 s: C1= 53 ps
- 15311 s: C1= 73 ps
- 7656 s: C1= 113 ps
- 3828 s: C1= 129 ps
- 1914 s: C1= 149 ps
- 957 s: C1= 190 ps
- 478 s: C1= 267 ps
- 239 s: C1= 367 ps
- 120 s: C1= 555 ps
- 60 s: C1= 797 ps



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- | | |
|---------------------|---------------------|
| 122528 s: P1= 13 ps | 122528 s: P2= 40 ps |
| 61264 s: P1= 33 ps | 61264 s: P2= 69 ps |
| 30632 s: P1= 51 ps | 30632 s: P2= 147 ps |
| 15316 s: P1= 73 ps | 15316 s: P2= 154 ps |
| 7658 s: P1= 102 ps | 7658 s: P2= 181 ps |
| 3829 s: P1= 190 ps | 3829 s: P2= 212 ps |
| 1915 s: P1= 229 ps | 1915 s: P2= 237 ps |
| 957 s: P1= 293 ps | 957 s: P2= 325 ps |
| 479 s: P1= 400 ps | 479 s: P2= 469 ps |
| 239 s: P1= 576 ps | 239 s: P2= 619 ps |
| 120 s: P1= 854 ps | 120 s: P2= 973 ps |
| 60 s: P1= 1181 ps | 60 s: P2= 1355 ps |



BP1C-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 91409
 Computed code bias (P1/P2)/m = 0.121 0.663
 Computed baseline (X,Y,Z)/m = 0.947 0.225 -0.753
 RMS of residuals /m = 0.537

Number of phase differences to fit baseline = 90748
 A priori baseline (X,Y,Z)/m = 0.947 0.225 -0.753
 14396 clock jitters computed out of 14396 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 4.6

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 1
 Computed baseline L1 (X,Y,Z)/m = -0.054 0.013 -0.029
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.061 0.011 -0.034
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 0
 Iter 2 Large residuals L2= 1
 Computed baseline L1 (X,Y,Z)/m = -0.054 0.013 -0.029
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.061 0.011 -0.034
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = 0.894 0.237 -0.782
 Final baseline L2 (X,Y,Z)/m = 0.886 0.236 -0.787

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 92268

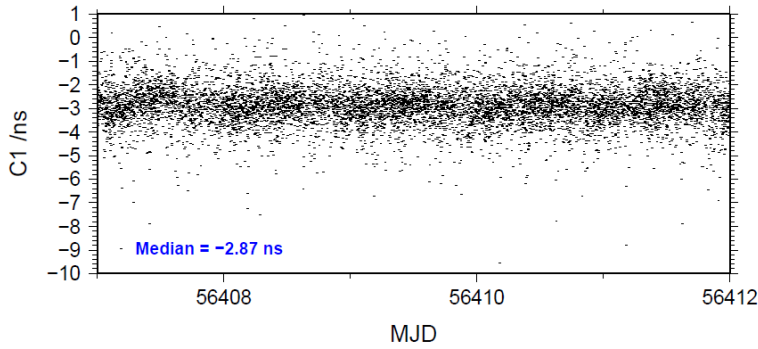
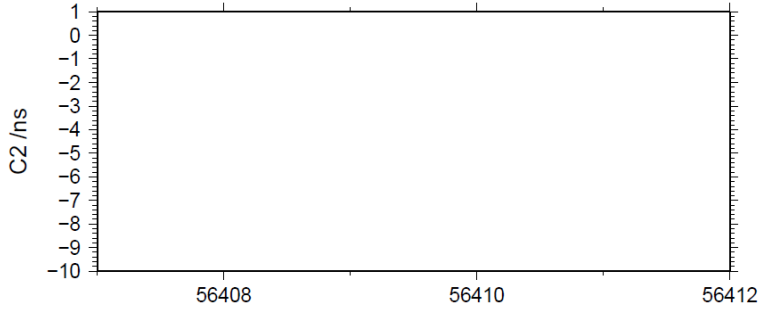
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 92162 -2.864 1.496
 C2: 0-NaN -NaN
 P1: 91376 0.527 1.867
 P2: 91368 2.352 1.972

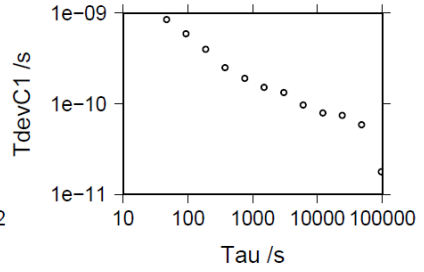
Number of 300s epochs in out file = 1440

Code #pts, median/ns, ave/ns, rms/ns
 C1: 9191 -2.869 -2.866 0.831
 C2: 0 0.000-NaN -NaN
 P1: 9123 0.498 0.512 1.117
 P2: 9122 2.346 2.345 1.229

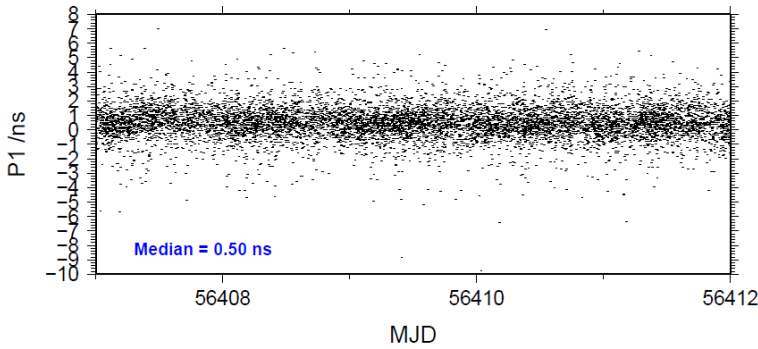
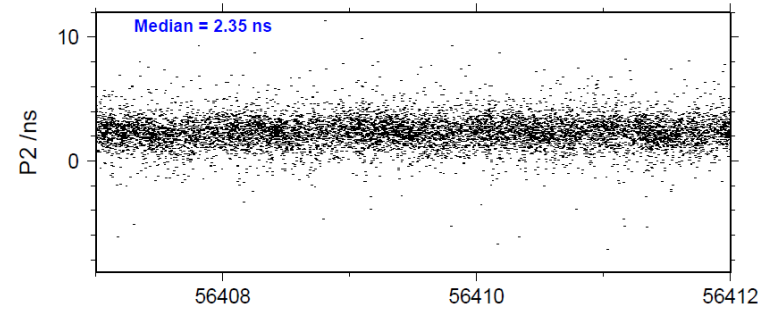
03/20/15 bp1cbp0r13115_5



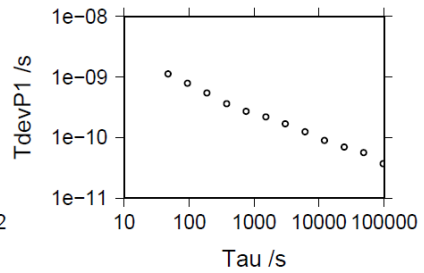
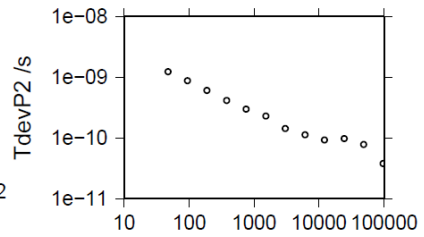
- 96205 s: C1= 18 ps
- 48102 s: C1= 69 ps
- 24051 s: C1= 74 ps
- 12026 s: C1= 79 ps
- 6013 s: C1= 97 ps
- 3006 s: C1= 133 ps
- 1503 s: C1= 151 ps
- 762 s: C1= 190 ps
- 376 s: C1= 249 ps
- 188 s: C1= 398 ps
- 94 s: C1= 589 ps
- 47 s: C1= 847 ps



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- | | |
|--------------------|--------------------|
| 96922 s: P1= 37 ps | 96933 s: P2= 38 ps |
| 48461 s: P1= 57 ps | 48466 s: P2= 78 ps |
| 24230 s: P1= 70 ps | 24233 s: P2= 97 ps |
| 12115 s: P1= 90 ps | 12117 s: P2= 92 ps |
| 6058 s: P1= 124 ps | 6058 s: P2= 113 ps |
| 3029 s: P1= 169 ps | 3029 s: P2= 143 ps |
| 1514 s: P1= 219 ps | 1515 s: P2= 228 ps |
| 757 s: P1= 270 ps | 757 s: P2= 297 ps |
| 379 s: P1= 363 ps | 379 s: P2= 416 ps |
| 189 s: P1= 548 ps | 189 s: P2= 603 ps |
| 95 s: P1= 785 ps | 95 s: P2= 882 ps |
| 47 s: P1= 1126 ps | 47 s: P2= 1226 ps |



2.2/ PTB (13172)Period

MJD 56464 to 56470

Delays

BP0U:

$$\text{REFDLY} = X_P = 61.45 \text{ ns} \quad (8.85 + C166 + \text{BP1I} + C153)$$

$$\text{CABDLY} = X_C = 182.0 \text{ ns} \quad (C134)$$

BP1C:

$$X_O = 187.9 \text{ ns} \quad (187.9)$$

$$X_P = 61.45 \text{ ns} \quad (8.85 + C166 + \text{BP1I} + C157)$$

$$\text{REFDLY} = 249.35 \text{ ns}$$

$$\text{CABDLY} = X_C = 235.7 \text{ ns} \quad (C131)$$

PTBB:

$$\text{REFDLY} = 75.3 \text{ ns}$$

$$\text{CABDLY} = 301.7 \text{ ns}$$

PTBG:

$$\text{REFDLY} = 48.2 \text{ ns}$$

$$\text{CABDLY} = 251.4 \text{ ns}$$

REFDLY value for PTBB documented in a message 26 Aug 2014 by A. Bauch.
 Measurements carried out in October 2010. Set-up unchanged since then.
 REFDLY value for PTBG documented in a message 11 Dec 2014 by A. Bauch
 Measurements carried out in October 2010. Set-up unchanged since then.

Setup at the PTB

None

BP0U-PTBB

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 87786
 Computed code bias (P1/P2)/m = -164.379 -167.306
 Computed baseline (X,Y,Z)/m = -5.169 2.738 3.253
 RMS of residuals /m = 0.651

Number of phase differences to fit baseline = 82681
 A priori baseline (X,Y,Z)/m = -5.169 2.738 3.253
 16186 clock jitters computed out of 16196 intervals
 AVE jitter /ps = 0.2 RMS jitter /ps = 29.5

Iter 1 Large residuals L1= 1
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.110 0.023 0.119
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.103 0.024 0.125
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 1
 Iter 2 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.110 0.023 0.119
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.103 0.024 0.125
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -5.059 2.761 3.372
 Final baseline L2 (X,Y,Z)/m = -5.066 2.763 3.378

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 87821

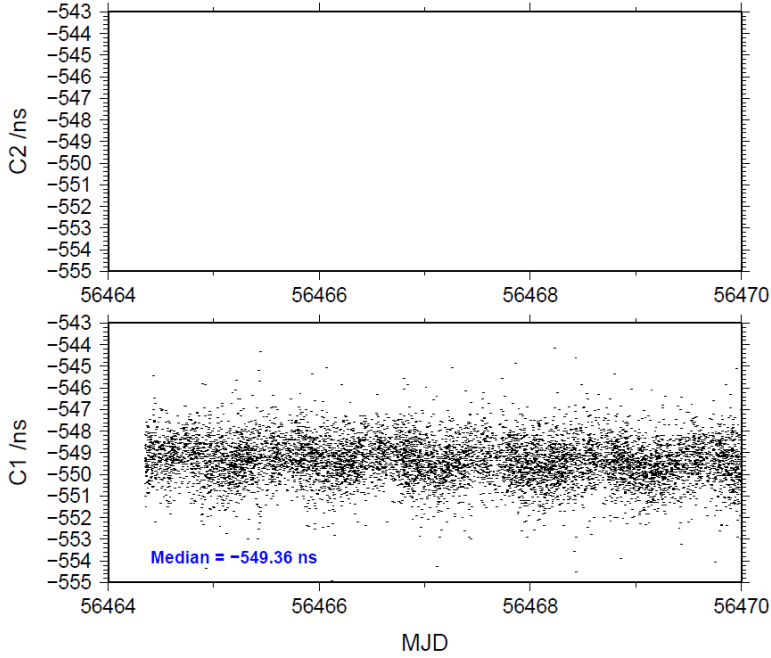
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 87729 -549.363 2.384
 C2: 0-NaN -NaN
 P1: 87702 -548.722 2.236
 P2: 87704 -558.484 2.494

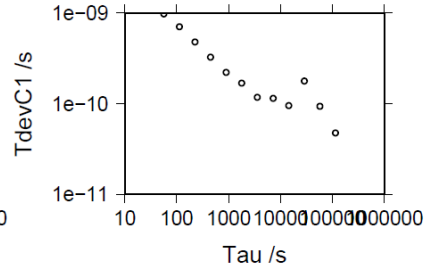
Number of 300s epochs in out file = 1629

Code #pts, median/ns, ave/ns, rms/ns
 C1: 8683 -549.361 -549.370 0.992
 C2: 0 0.000-NaN -NaN
 P1: 8683 -548.752 -548.751 1.016
 P2: 8682 -558.465 -558.477 1.215

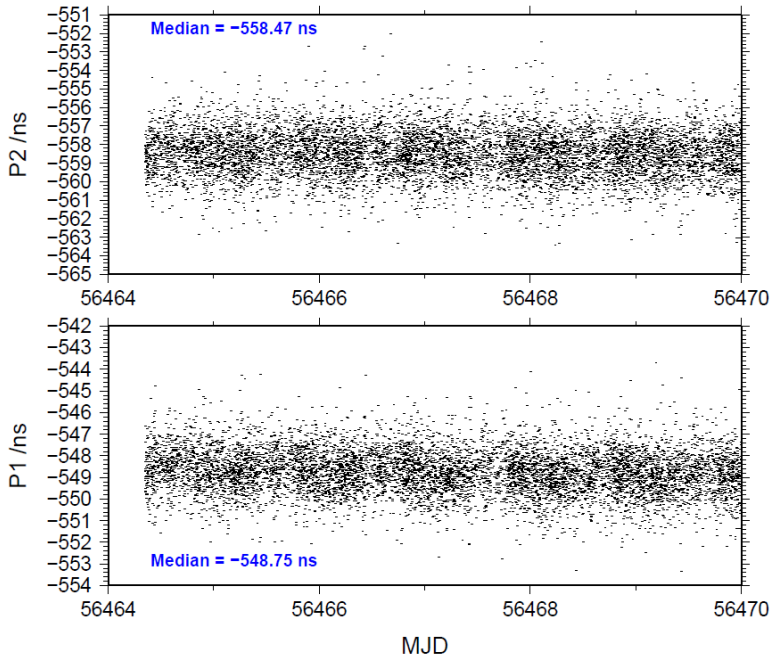
03/20/15 bp0uptbb13172_6



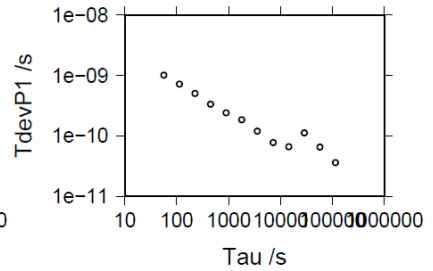
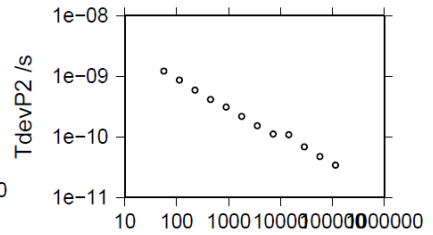
115209 s: C1= 48 ps
 57604 s: C1= 94 ps
 28802 s: C1= 177 ps
 14401 s: C1= 95 ps
 7201 s: C1= 115 ps
 3600 s: C1= 118 ps
 1800 s: C1= 169 ps
 900 s: C1= 220 ps
 450 s: C1= 326 ps
 225 s: C1= 477 ps
 113 s: C1= 703 ps
 56 s: C1= 972 ps



03/20/15 bp0uptbb13172_6



115209 s: P1= 36 ps 115222 s: P2= 34 ps
 57604 s: P1= 66 ps 57611 s: P2= 47 ps
 28802 s: P1= 113 ps 28806 s: P2= 68 ps
 14401 s: P1= 67 ps 14403 s: P2= 108 ps
 7201 s: P1= 78 ps 7201 s: P2= 111 ps
 3600 s: P1= 120 ps 3601 s: P2= 153 ps
 1800 s: P1= 186 ps 1800 s: P2= 217 ps
 900 s: P1= 243 ps 900 s: P2= 312 ps
 450 s: P1= 336 ps 450 s: P2= 416 ps
 225 s: P1= 504 ps 225 s: P2= 591 ps
 113 s: P1= 718 ps 113 s: P2= 865 ps
 56 s: P1= 1009 ps 56 s: P2= 1213 ps



BP0U-PTBG

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 87745
 Computed code bias (P1/P2)/m = -156.682 -161.717
 Computed baseline (X,Y,Z)/m = -0.702 -0.961 0.232
 RMS of residuals /m = 0.654

Number of phase differences to fit baseline = 82675
 A priori baseline (X,Y,Z)/m = -0.702 -0.961 0.232
 16181 clock jitters computed out of 16200 intervals
 AVE jitter /ps = 0.2 RMS jitter /ps = 29.5

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.058 0.017 0.107
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.059 0.020 0.116
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -0.644 -0.944 0.339
 Final baseline L2 (X,Y,Z)/m = -0.643 -0.941 0.348

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 87782

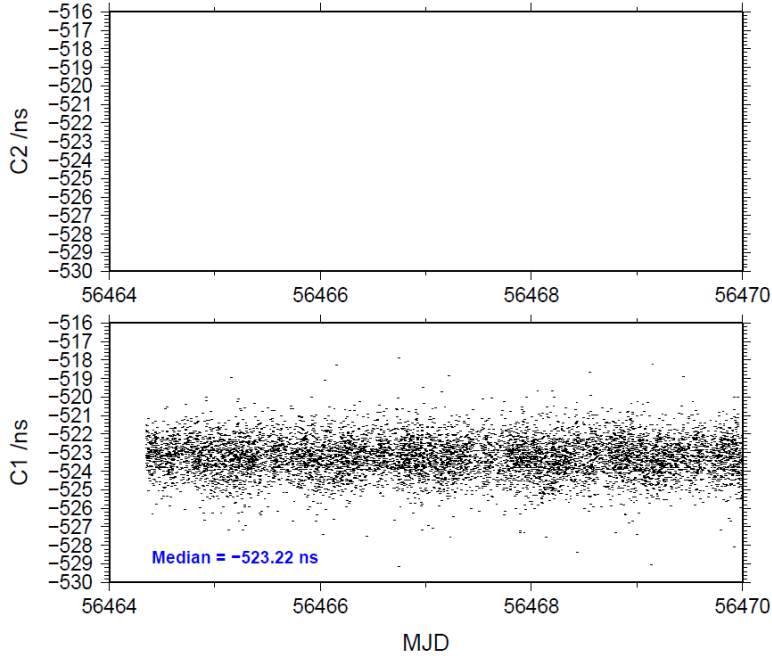
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 87700 -523.207 2.322
 C2: 0 -NaN -NaN
 P1: 87664 -522.921 2.222
 P2: 87672 -539.735 2.466

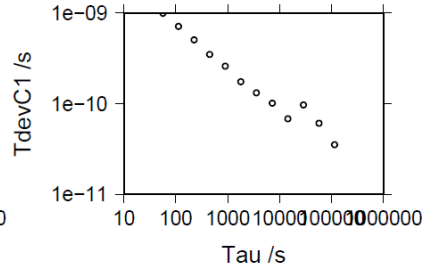
Number of 300s epochs in out file = 1629

Code #pts, median/ns, ave/ns, rms/ns
 C1: 8679 -523.222 -523.237 1.005
 C2: 0 0.000 -NaN -NaN
 P1: 8677 -522.941 -522.941 1.041
 P2: 8678 -539.731 -539.731 1.206

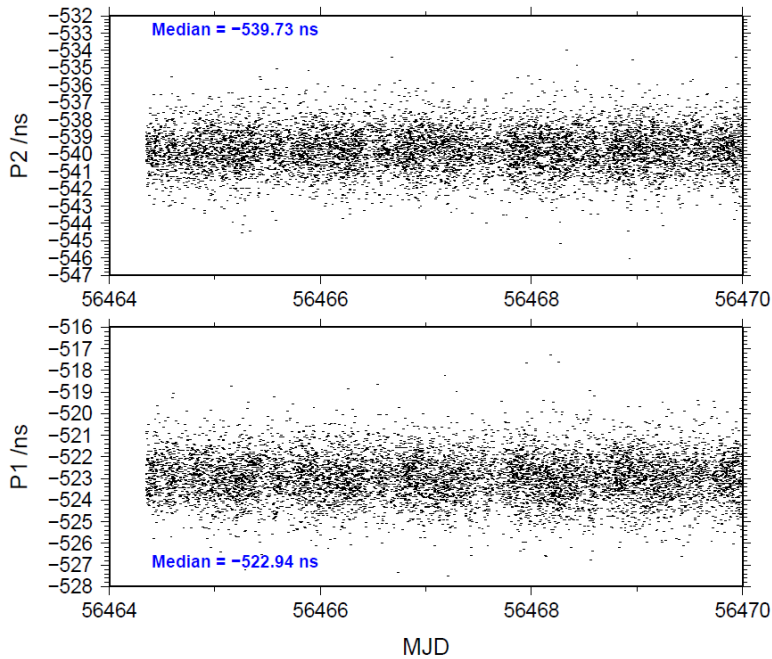
03/20/15 bp0uptbg13172_6



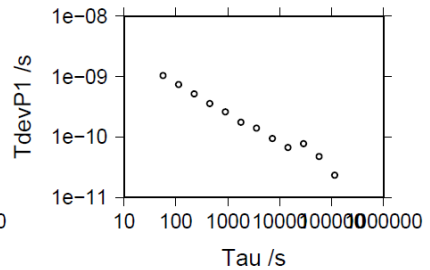
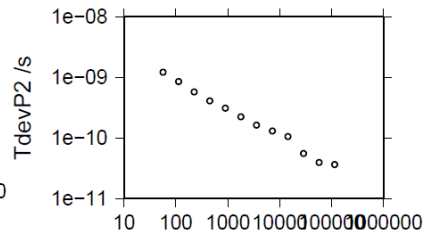
- 115262 s: C1= 35 ps
- 57631 s: C1= 61 ps
- 28815 s: C1= 97 ps
- 14408 s: C1= 68 ps
- 7204 s: C1= 101 ps
- 3602 s: C1= 132 ps
- 1801 s: C1= 174 ps
- 900 s: C1= 259 ps
- 450 s: C1= 348 ps
- 225 s: C1= 503 ps
- 113 s: C1= 709 ps
- 56 s: C1= 994 ps



03/20/15 bp0uptbg13172_6



- 115289 s: P1= 24 ps
- 57644 s: P1= 48 ps
- 28822 s: P1= 77 ps
- 14411 s: P1= 68 ps
- 7206 s: P1= 94 ps
- 3603 s: P1= 140 ps
- 1801 s: P1= 177 ps
- 901 s: P1= 263 ps
- 450 s: P1= 359 ps
- 225 s: P1= 515 ps
- 113 s: P1= 736 ps
- 56 s: P1= 1044 ps
- 115275 s: P2= 36 ps
- 57638 s: P2= 39 ps
- 28819 s: P2= 56 ps
- 14409 s: P2= 105 ps
- 7205 s: P2= 130 ps
- 3602 s: P2= 162 ps
- 1801 s: P2= 224 ps
- 901 s: P2= 310 ps
- 450 s: P2= 408 ps
- 225 s: P2= 574 ps
- 113 s: P2= 857 ps
- 56 s: P2= 1218 ps



BP1C-PTBB

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 116609
 Computed code bias (P1/P2)/m = -147.853 -151.076
 Computed baseline (X,Y,Z)/m = -5.271 2.369 3.424
 RMS of residuals /m = 0.602

Number of phase differences to fit baseline = 116356
 A priori baseline (X,Y,Z)/m = -5.271 2.369 3.424
 16335 clock jitters computed out of 16335 intervals
 AVE jitter /ps = 0.2 RMS jitter /ps = 4.8

Iter 1 Large residuals L1= 3
 Iter 1 Large residuals L2= 4
 Computed baseline L1 (X,Y,Z)/m = 0.056 0.031 0.046
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.053 0.031 0.041
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 3
 Iter 2 Large residuals L2= 4
 Computed baseline L1 (X,Y,Z)/m = 0.056 0.031 0.046
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.053 0.031 0.041
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -5.215 2.400 3.470
 Final baseline L2 (X,Y,Z)/m = -5.218 2.400 3.466

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 120207

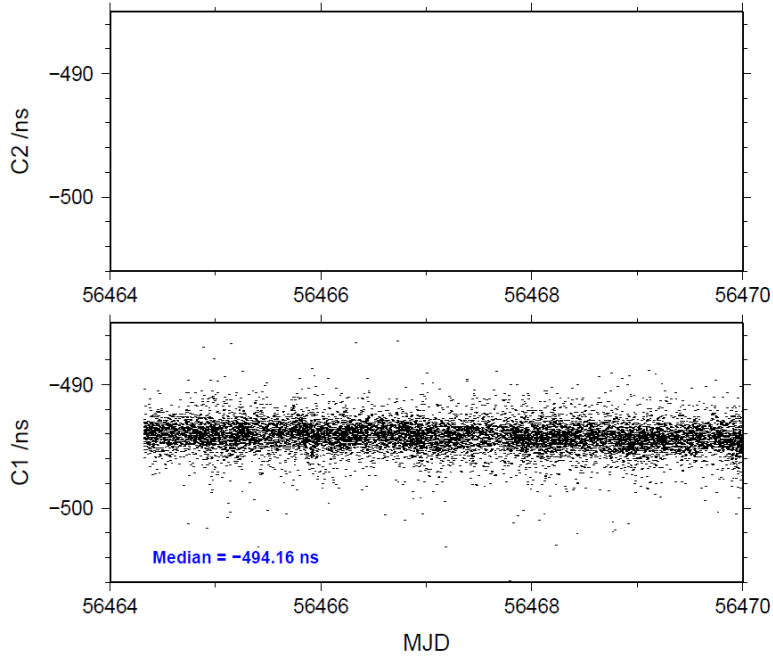
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 119426 -494.155 3.042
 C2: 0-NaN -NaN
 P1: 116900 -493.349 2.381
 P2: 116755 -504.091 2.496

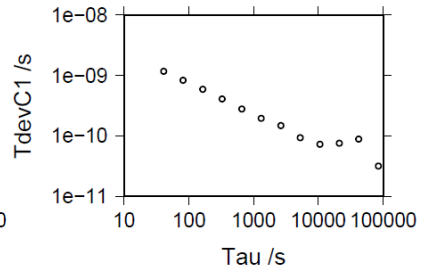
Number of 300s epochs in out file = 1635

Code #pts, median/ns, ave/ns, rms/ns
 C1: 11935 -494.157 -494.177 1.180
 C2: 0 0.000-NaN -NaN
 P1: 11690 -493.378 -493.373 0.961
 P2: 11677 -504.136 -504.111 1.091

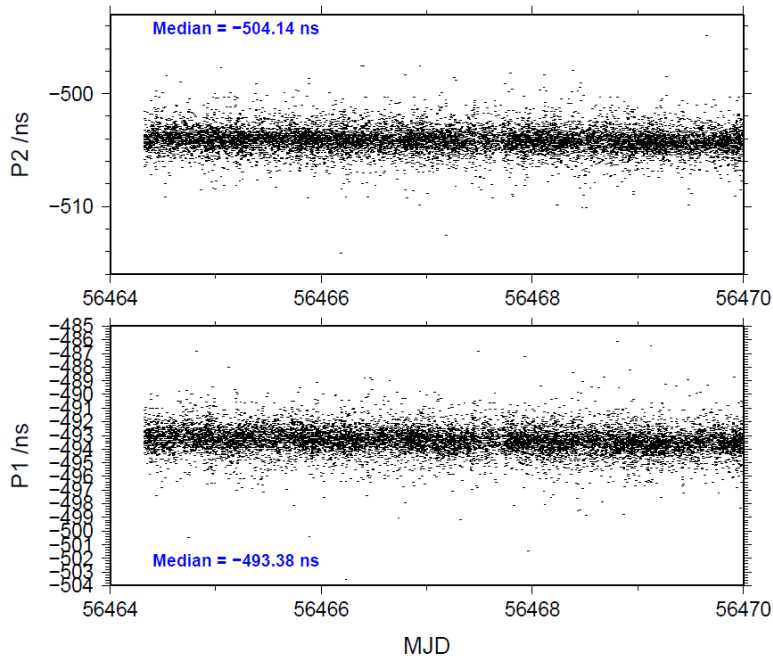
03/20/15 bp1cptbb13172_6



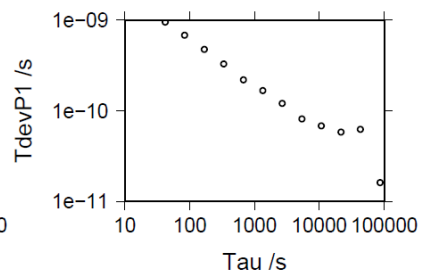
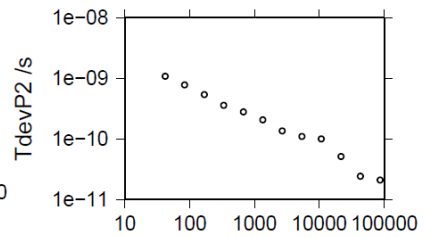
- 84123 s: C1= 32 ps
- 42082 s: C1= 89 ps
- 21031 s: C1= 76 ps
- 10515 s: C1= 73 ps
- 5258 s: C1= 94 ps
- 2629 s: C1= 149 ps
- 1314 s: C1= 195 ps
- 657 s: C1= 278 ps
- 329 s: C1= 409 ps
- 164 s: C1= 589 ps
- 82 s: C1= 836 ps
- 41 s: C1= 1164 ps



03/20/15 bp1cptbb13172_6



- 85887 s: P1= 16 ps 85982 s: P2= 21 ps
- 42943 s: P1= 63 ps 42991 s: P2= 24 ps
- 21472 s: P1= 58 ps 21496 s: P2= 51 ps
- 10736 s: P1= 69 ps 10748 s: P2= 100 ps
- 5368 s: P1= 81 ps 5374 s: P2= 109 ps
- 2684 s: P1= 121 ps 2687 s: P2= 135 ps
- 1342 s: P1= 168 ps 1343 s: P2= 206 ps
- 671 s: P1= 218 ps 672 s: P2= 279 ps
- 335 s: P1= 327 ps 336 s: P2= 360 ps
- 168 s: P1= 476 ps 168 s: P2= 542 ps
- 84 s: P1= 679 ps 84 s: P2= 777 ps
- 42 s: P1= 952 ps 42 s: P2= 1080 ps



BP1C-PTBG

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 117786
 Computed code bias (P1/P2)/m = -140.122 -145.460
 Computed baseline (X,Y,Z)/m = -0.837 -1.351 0.386
 RMS of residuals /m = 0.609

Number of phase differences to fit baseline = 117344
 A priori baseline (X,Y,Z)/m = -0.837 -1.351 0.386
 16335 clock jitters computed out of 16335 intervals
 AVE jitter /ps = 0.2 RMS jitter /ps = 4.7

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 2
 Computed baseline L1 (X,Y,Z)/m = 0.037 0.043 0.056
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.037 0.042 0.055
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 0
 Iter 2 Large residuals L2= 2
 Computed baseline L1 (X,Y,Z)/m = 0.037 0.043 0.056
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.037 0.042 0.055
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -0.800 -1.308 0.442
 Final baseline L2 (X,Y,Z)/m = -0.800 -1.309 0.441

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 120801

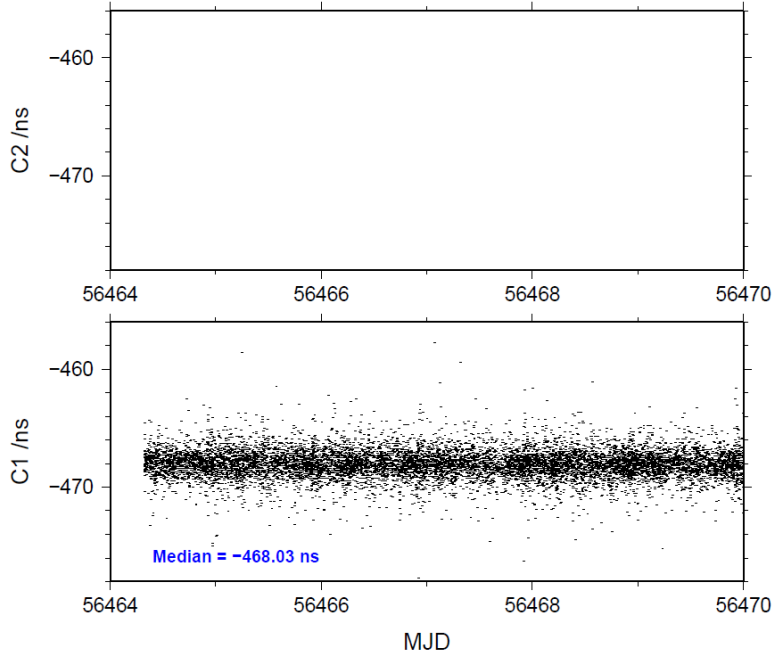
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 120112 -468.000 2.943
 C2: 0-NaN -NaN
 P1: 118038 -467.542 2.413
 P2: 117893 -485.352 2.543

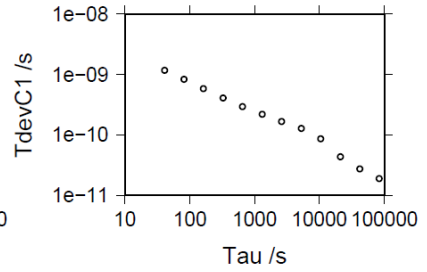
Number of 300s epochs in out file = 1635

Code #pts, median/ns, ave/ns, rms/ns
 C1: 12008 -468.031 -468.032 1.179
 C2: 0 0.000-NaN -NaN
 P1: 11804 -467.585 -467.563 1.033
 P2: 11793 -485.375 -485.364 1.128

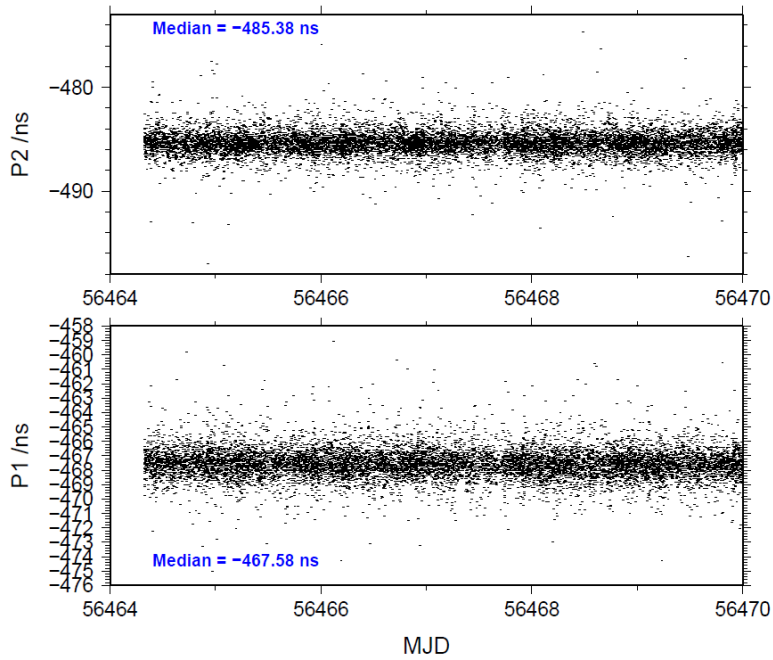
03/20/15 bp1cptbg13172_6



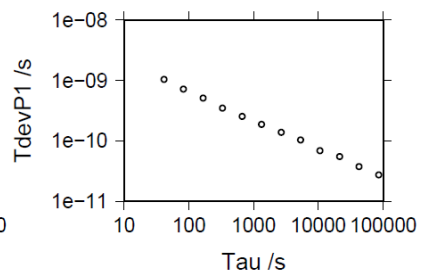
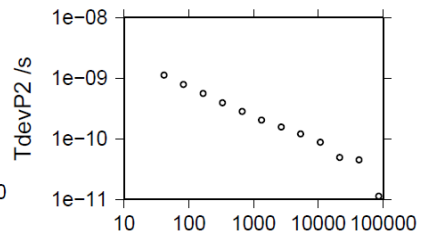
- 83612 s: C1= 19 ps
- 41806 s: C1= 28 ps
- 20903 s: C1= 43 ps
- 10452 s: C1= 86 ps
- 5226 s: C1= 128 ps
- 2613 s: C1= 167 ps
- 1306 s: C1= 220 ps
- 653 s: C1= 296 ps
- 327 s: C1= 408 ps
- 163 s: C1= 586 ps
- 82 s: C1= 827 ps
- 41 s: C1= 1178 ps



03/20/15 bp1cptbg13172_6



- | | |
|--------------------|--------------------|
| 85057 s: P1= 27 ps | 85136 s: P2= 11 ps |
| 42529 s: P1= 38 ps | 42568 s: P2= 45 ps |
| 21264 s: P1= 55 ps | 21284 s: P2= 49 ps |
| 10632 s: P1= 69 ps | 10642 s: P2= 88 ps |
| 5316 s: P1= 105 ps | 5321 s: P2= 119 ps |
| 2658 s: P1= 140 ps | 2661 s: P2= 156 ps |
| 1329 s: P1= 188 ps | 1330 s: P2= 204 ps |
| 665 s: P1= 254 ps | 665 s: P2= 282 ps |
| 332 s: P1= 348 ps | 333 s: P2= 392 ps |
| 166 s: P1= 515 ps | 166 s: P2= 561 ps |
| 83 s: P1= 719 ps | 83 s: P2= 792 ps |
| 42 s: P1= 1047 ps | 42 s: P2= 1131 ps |



2.3/ BIPM (13280)Period

MJD 56572 to 56579

Delays

All measurements at BIPM carried out by L. Tisserand.

Equipment used to measure internal delay of local receiver is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 4680, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

Equipment used to measure internal delay of traveling receivers is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 5482, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

BP0R:

$$X_O = 238.1 \text{ ns} \quad (242.8-13.4+8.7)$$

$$X_P = 12.8 \text{ ns} \quad (C1+BIPM9)$$

$$\text{REFDLY} = 250.9 \text{ ns}$$

$$\text{CABDLY} = X_C = 133.4 \text{ ns} \quad (C113)$$

BP0U:

$$\text{REFDLY} = X_P = 54.2 \text{ ns} \quad (B1+C166+BP1I+C153)$$

$$\text{CABDLY} = X_C = 182.0 \text{ ns} \quad (C134)$$

BP1C:

$$X_O = 207.5 \text{ ns} \quad (217.9-10.4)$$

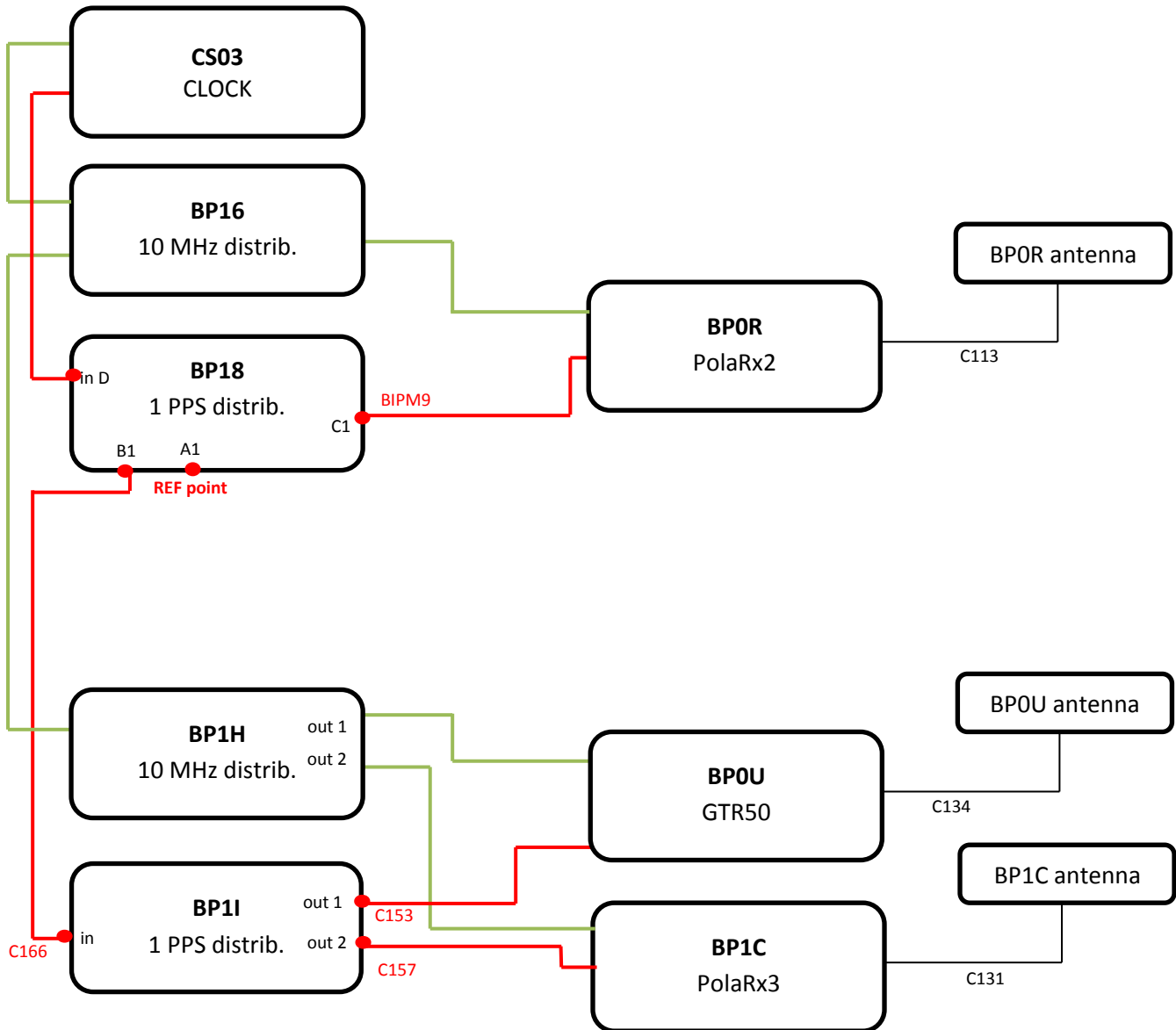
$$X_P = 54.2 \text{ ns} \quad (B1+C166+BP1I+C157)$$

$$\text{REFDLY} = 261.7 \text{ ns}$$

$$\text{CABDLY} = X_C = 235.7 \text{ ns} \quad (C131)$$

Setup at the BIPM

1 PPS ————
 10 MHz ————



BP0U-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 104929
 Computed code bias (P1/P2)/m = -34.139 -33.118
 Computed baseline (X,Y,Z)/m = 0.678 0.204 -0.948
 RMS of residuals /m = 0.597

Number of phase differences to fit baseline = 98779
 A priori baseline (X,Y,Z)/m = 0.678 0.204 -0.948
 19628 clock jitters computed out of 19647 intervals
 AVE jitter /ps = 0.0 RMS jitter /ps = 28.3

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.051 0.018 0.183
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.064 0.017 0.189
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = 0.730 0.221 -0.765
 Final baseline L2 (X,Y,Z)/m = 0.742 0.221 -0.759

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 104973

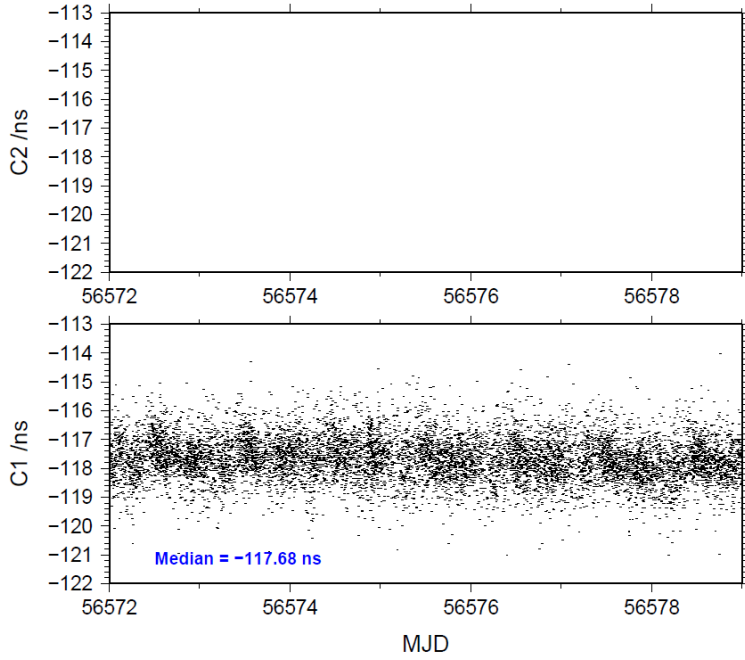
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 104920 -117.668 1.384
 C2: 0-NaN -NaN
 P1: 104874 -114.271 2.023
 P2: 104873 -110.897 2.252

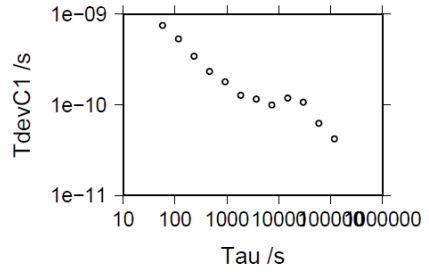
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 10439 -117.684 -117.671 0.756
 C2: 0 0.000-NaN -NaN
 P1: 10437 -114.310 -114.295 1.085
 P2: 10437 -110.904 -110.889 1.319

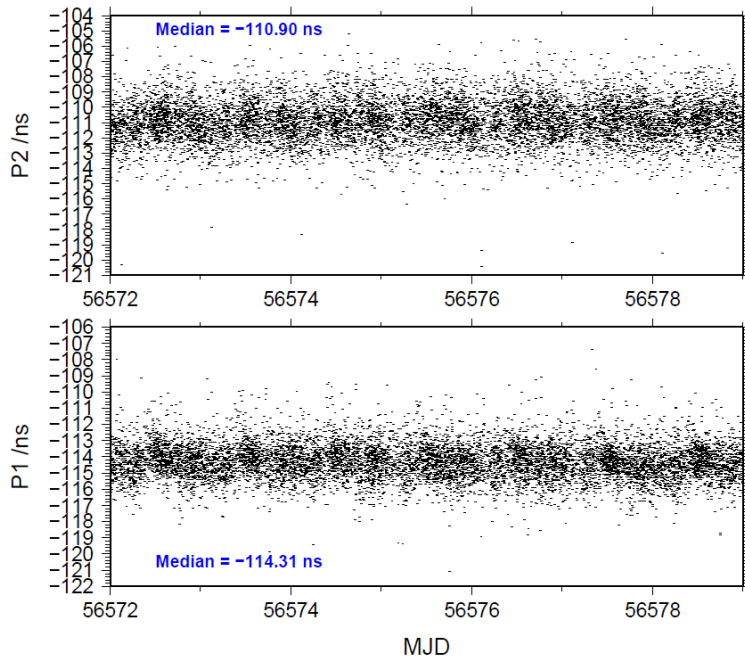
03/20/15 bp0ubp0r13280_7



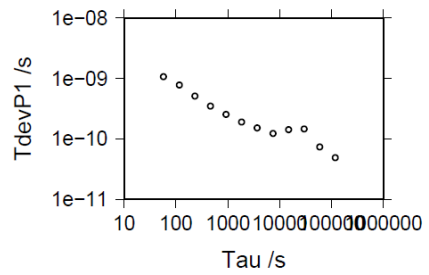
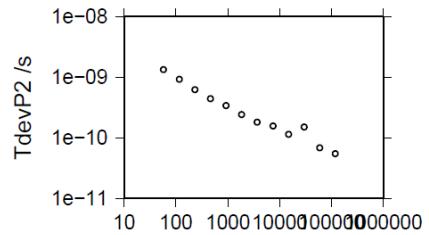
- 118607 s: C1= 42 ps
- 59303 s: C1= 63 ps
- 29652 s: C1= 107 ps
- 14826 s: C1= 119 ps
- 7413 s: C1= 100 ps
- 3706 s: C1= 115 ps
- 1853 s: C1= 128 ps
- 927 s: C1= 179 ps
- 463 s: C1= 233 ps
- 232 s: C1= 344 ps
- 116 s: C1= 533 ps
- 58 s: C1= 747 ps



03/20/15 bp0ubp0r13280_7



- 118629 s: P1= 49 ps 118629 s: P2= 55 ps
- 59315 s: P1= 74 ps 59315 s: P2= 68 ps
- 29657 s: P1= 146 ps 29657 s: P2= 151 ps
- 14829 s: P1= 143 ps 14829 s: P2= 114 ps
- 7414 s: P1= 124 ps 7414 s: P2= 156 ps
- 3707 s: P1= 152 ps 3707 s: P2= 180 ps
- 1854 s: P1= 191 ps 1854 s: P2= 243 ps
- 927 s: P1= 255 ps 927 s: P2= 341 ps
- 463 s: P1= 349 ps 463 s: P2= 444 ps
- 232 s: P1= 511 ps 232 s: P2= 620 ps
- 116 s: P1= 783 ps 116 s: P2= 919 ps
- 58 s: P1= 1065 ps 58 s: P2= 1334 ps



BP1C-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 133166
 Computed code bias (P1/P2)/m = -23.570 -22.913
 Computed baseline (X,Y,Z)/m = 3.533 -0.773 -3.150
 RMS of residuals /m = 0.527

Number of phase differences to fit baseline = 131837
 A priori baseline (X,Y,Z)/m = 3.533 -0.773 -3.150
 20153 clock jitters computed out of 20153 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 4.7

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = -0.094 0.016 -0.015
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.088 0.016 -0.016
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = 3.438 -0.757 -3.166
 Final baseline L2 (X,Y,Z)/m = 3.445 -0.757 -3.167

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 134931

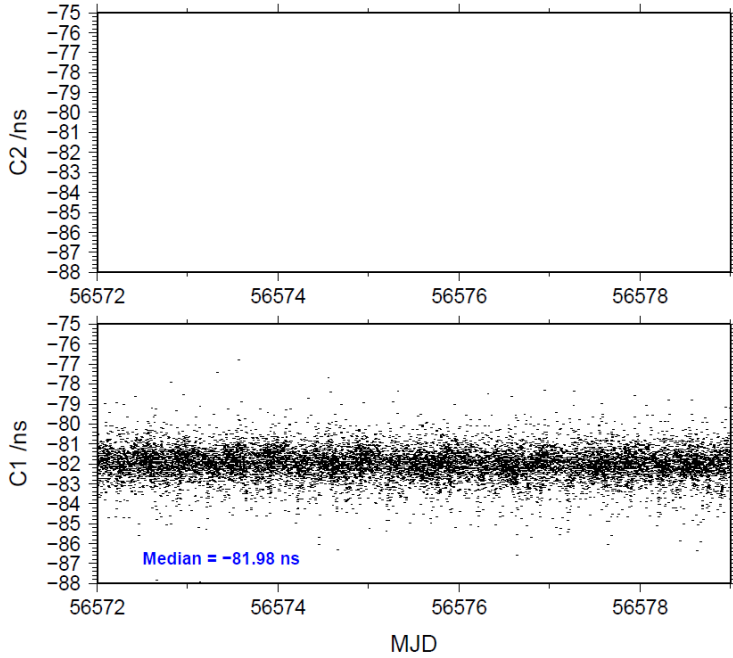
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 134658 -81.997 1.498
 C2: 0-NaN -NaN
 P1: 133126 -78.451 1.813
 P2: 133111 -76.269 1.967

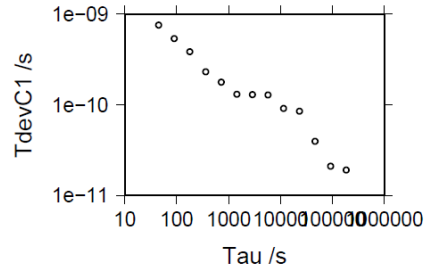
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 13405 -81.983 -82.003 0.765
 C2: 0 0.000-NaN -NaN
 P1: 13288 -78.437 -78.459 1.011
 P2: 13287 -76.260 -76.278 1.108

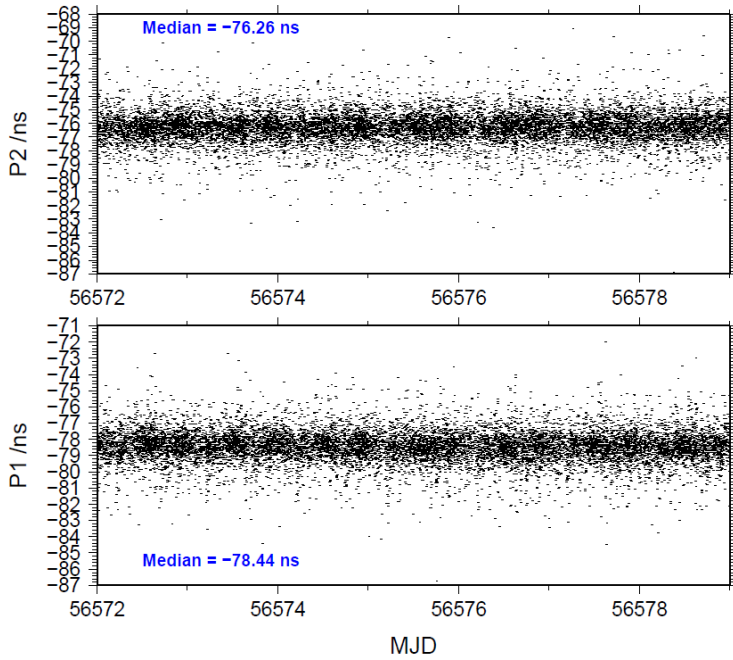
03/20/15 bp1cbp0r13280_7



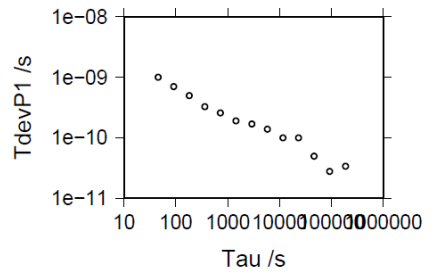
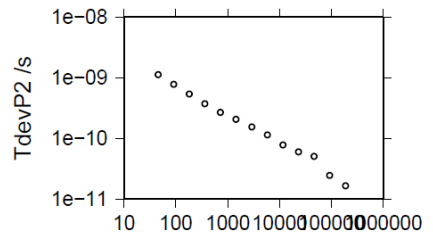
- 184723 s: C1= 19 ps
- 92362 s: C1= 21 ps
- 46181 s: C1= 40 ps
- 23090 s: C1= 85 ps
- 11545 s: C1= 92 ps
- 5773 s: C1= 128 ps
- 2886 s: C1= 129 ps
- 1443 s: C1= 131 ps
- 722 s: C1= 178 ps
- 361 s: C1= 232 ps
- 180 s: C1= 385 ps
- 90 s: C1= 636 ps
- 45 s: C1= 758 ps



03/20/15 bp1cbp0r13280_7



- 186350 s: P1= 34 ps 186364 s: P2= 16 ps
- 93175 s: P1= 28 ps 93182 s: P2= 24 ps
- 46887 s: P1= 50 ps 46891 s: P2= 50 ps
- 23294 s: P1= 100 ps 23296 s: P2= 60 ps
- 11647 s: P1= 100 ps 11648 s: P2= 78 ps
- 5823 s: P1= 139 ps 5824 s: P2= 115 ps
- 2912 s: P1= 168 ps 2912 s: P2= 155 ps
- 1456 s: P1= 190 ps 1456 s: P2= 206 ps
- 728 s: P1= 259 ps 728 s: P2= 269 ps
- 364 s: P1= 328 ps 364 s: P2= 374 ps
- 182 s: P1= 499 ps 182 s: P2= 539 ps
- 91 s: P1= 699 ps 91 s: P2= 779 ps
- 46 s: P1= 1006 ps 46 s: P2= 1125 ps



2.4/ TL (13311)Period

MJD 56603 to 56609

Delays

BP0U:

$$\text{REFDLY} = X_P = 52.6 \text{ ns} \quad (0+C166+BP1I+C153)$$

$$\text{CABDLY} = X_C = 182.0 \text{ ns} \quad (C134)$$

BP1C:

$$X_O = 181.5 \text{ ns} \quad (196.77-15.29)$$

$$X_P = 52.6 \text{ ns} \quad (0+C166+BP1I+C157)$$

$$\text{REFDLY} = 234.1 \text{ ns}$$

$$\text{CABDLY} = X_C = 235.7 \text{ ns} \quad (C131)$$

TWTF:

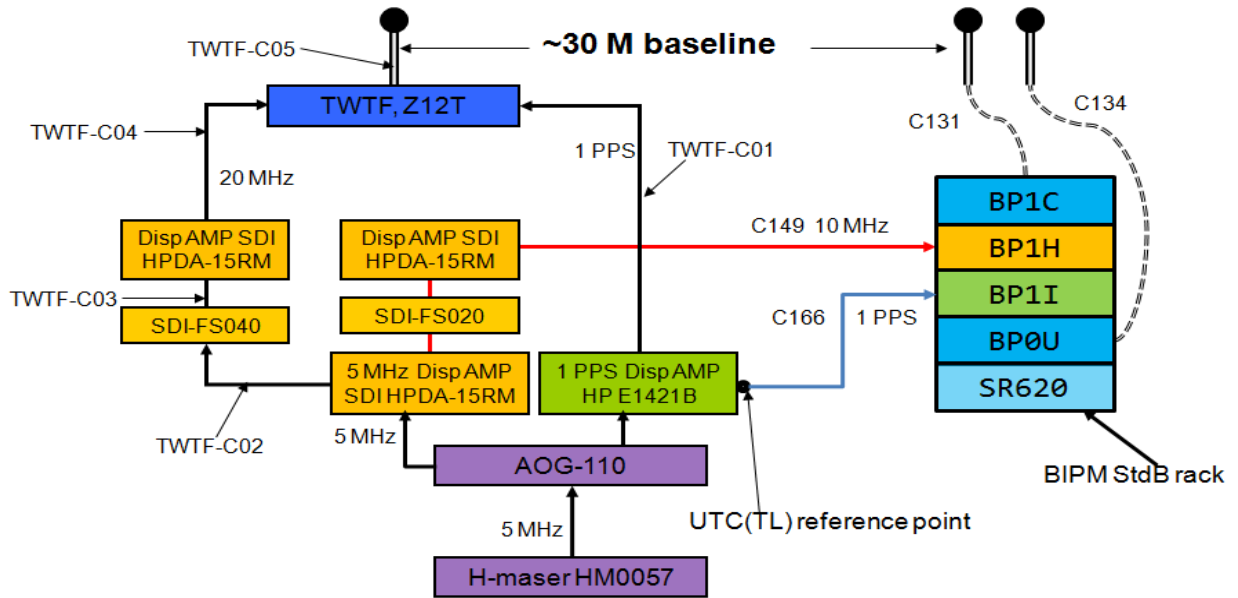
$$\text{REFDLY} = 52.0 \text{ ns}$$

$$\text{CABDLY} = 119.8 \text{ ns}$$

Source of measurements: TBD

REFDLY value not valid since a change of set-up due to change of master clock in July 2007 on MJD 54290 (info from C. Lin reported by Z. Jiang)..

Setup at the TL



BP0U-TWTF

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 96609
 Computed code bias (P1/P2)/m = -114.604 -115.460
 Computed baseline (X,Y,Z)/m = 7.434 7.222 2.382
 RMS of residuals /m = 0.882

Number of phase differences to fit baseline = 51450
 A priori baseline (X,Y,Z)/m = 7.434 7.222 2.382
 9594 clock jitters computed out of 10678 intervals
 AVE jitter /ps = 1.8 RMS jitter /ps = 70.6

Iter 1 Large residuals L1= 1415
 Iter 1 Large residuals L2= 1409
 Computed baseline L1 (X,Y,Z)/m = 0.401 -0.605 -0.180
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.395 -0.583 -0.172
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 1415
 Iter 2 Large residuals L2= 1409
 Computed baseline L1 (X,Y,Z)/m = 0.403 -0.606 -0.180
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.397 -0.590 -0.174
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = 7.836 6.617 2.201
 Final baseline L2 (X,Y,Z)/m = 7.830 6.633 2.208

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 107555

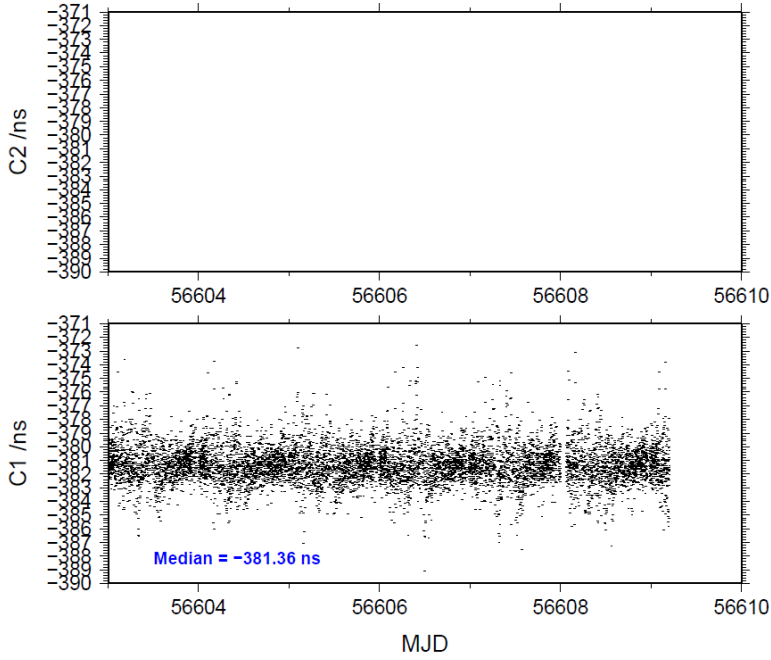
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 96505 -381.290 1.686
 C2: 0-NaN -NaN
 P1: 96425 -381.132 2.029
 P2: 96418 -384.024 5.463

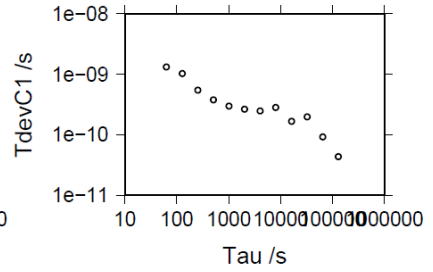
Number of 300s epochs in out file = 1934

Code #pts, median/ns, ave/ns, rms/ns
 C1: 9524 -381.362 -381.295 1.352
 C2: 0 0.000-NaN -NaN
 P1: 9515 -381.229 -381.165 1.485
 P2: 9515 -384.575 -384.101 4.860

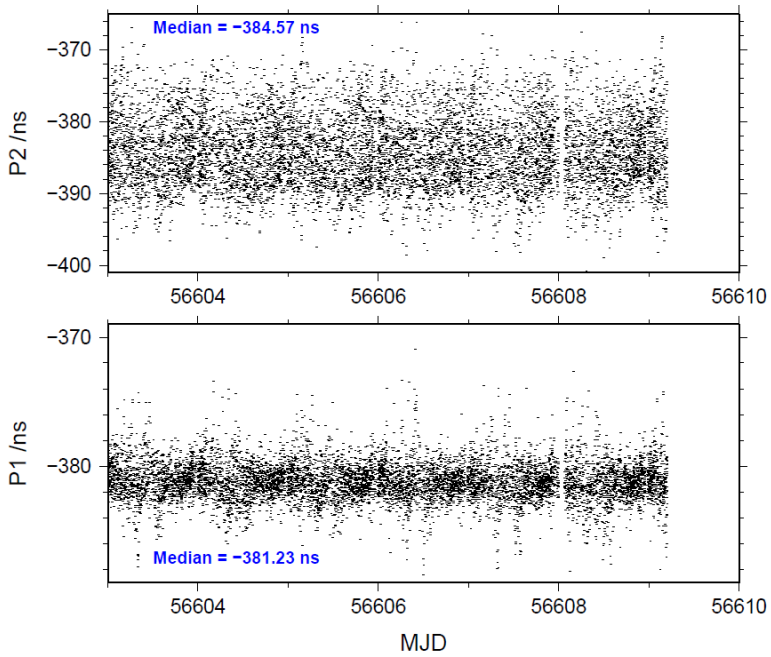
03/20/15 bp0utwtf13311_7



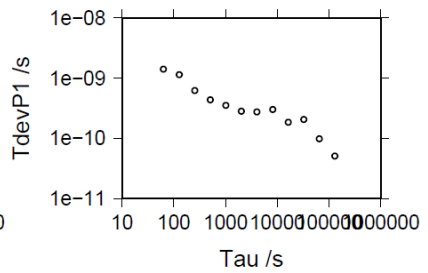
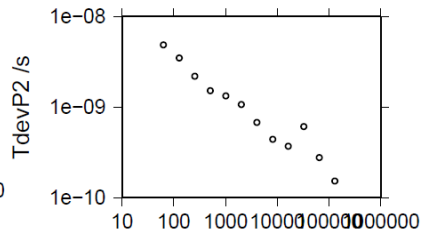
130003 s: C1= 44 ps
 65001 s: C1= 93 ps
 32501 s: C1= 198 ps
 16250 s: C1= 166 ps
 8125 s: C1= 281 ps
 4063 s: C1= 247 ps
 2031 s: C1= 263 ps
 1016 s: C1= 298 ps
 508 s: C1= 378 ps
 254 s: C1= 548 ps
 127 s: C1= 1032 ps
 63 s: C1= 1323 ps



03/20/15 bp0utwtf13311_7



130126 s: P1= 51 ps 130126 s: P2= 153 ps
 65063 s: P1= 99 ps 65063 s: P2= 276 ps
 32531 s: P1= 205 ps 32531 s: P2= 612 ps
 16266 s: P1= 186 ps 16266 s: P2= 369 ps
 8133 s: P1= 303 ps 8133 s: P2= 441 ps
 4066 s: P1= 274 ps 4066 s: P2= 674 ps
 2033 s: P1= 284 ps 2033 s: P2= 1067 ps
 1017 s: P1= 352 ps 1017 s: P2= 1335 ps
 508 s: P1= 437 ps 508 s: P2= 1515 ps
 254 s: P1= 619 ps 254 s: P2= 2193 ps
 127 s: P1= 1147 ps 127 s: P2= 3492 ps
 64 s: P1= 1404 ps 64 s: P2= 4854 ps



BP1C-TWTF

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 139328
 Computed code bias (P1/P2)/m = -95.993 -97.229
 Computed baseline (X,Y,Z)/m = 8.658 7.855 2.143
 RMS of residuals /m = 0.870

Number of phase differences to fit baseline = 140726
 A priori baseline (X,Y,Z)/m = 8.658 7.855 2.143
 17672 clock jitters computed out of 18987 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 8.6

Iter 1 Large residuals L1= 2374
 Iter 1 Large residuals L2= 2376
 Computed baseline L1 (X,Y,Z)/m = 0.339 -0.560 -0.140
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.345 -0.552 -0.139
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 2374
 Iter 2 Large residuals L2= 2376
 Computed baseline L1 (X,Y,Z)/m = 0.339 -0.560 -0.140
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.345 -0.552 -0.139
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = 8.997 7.296 2.003
 Final baseline L2 (X,Y,Z)/m = 9.003 7.303 2.003

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 158015

Global average of individual differences

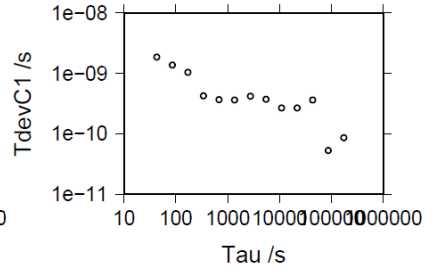
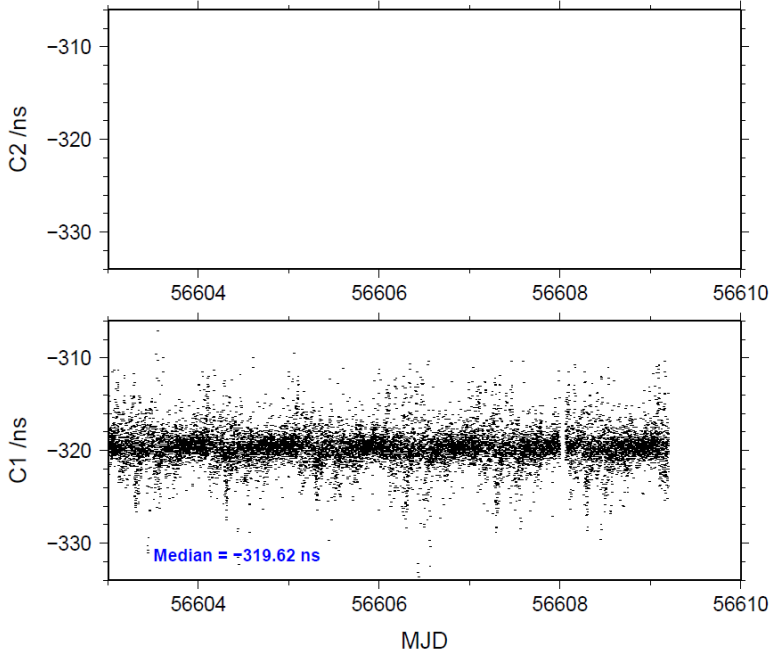
Code #pts, ave/ns, rms/ns
 C1: 141807 -319.585 2.333
 C2: 0-NaN -NaN
 P1: 139228 -319.241 2.212
 P2: 139002 -323.360 5.703

Number of 300s epochs in out file = 1958

Code #pts, median/ns, ave/ns, rms/ns
 C1: 14148 -319.625 -319.597 1.938
 C2: 0 0.000-NaN -NaN
 P1: 13903 -319.267 -319.258 1.855
 P2: 13879 -323.918 -323.443 5.194

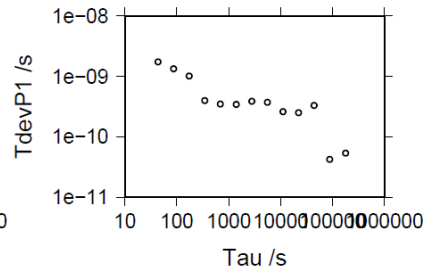
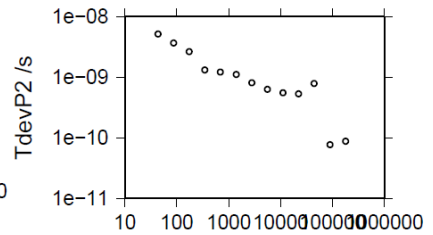
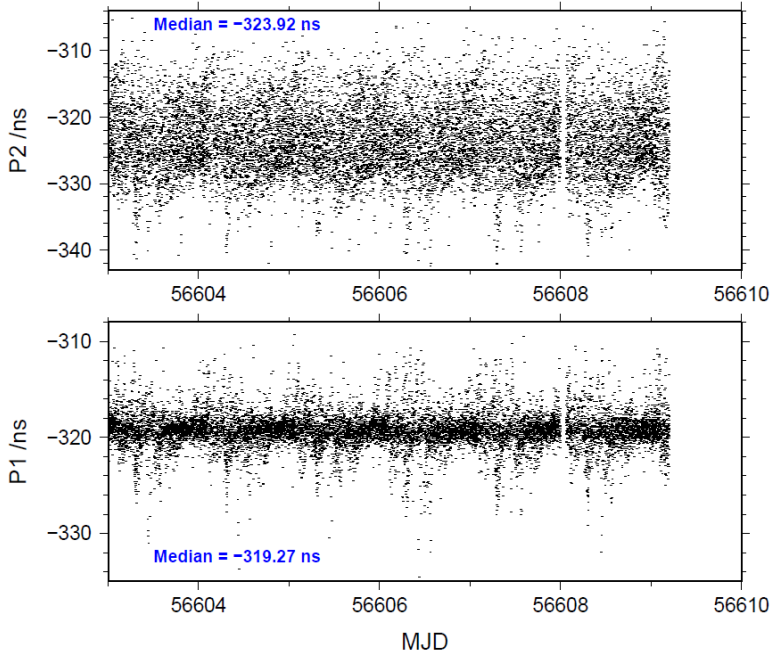
03/20/15 bp1ctwtf13311_7

- 175022 s: C1= 87 ps
- 87511 s: C1= 53 ps
- 43755 s: C1= 362 ps
- 21878 s: C1= 270 ps
- 10939 s: C1= 267 ps
- 5469 s: C1= 371 ps
- 2735 s: C1= 419 ps
- 1367 s: C1= 362 ps
- 684 s: C1= 368 ps
- 342 s: C1= 424 ps
- 171 s: C1= 1043 ps
- 85 s: C1= 1375 ps
- 43 s: C1= 1845 ps



03/20/15 bp1ctwtf13311_7

- 178106 s: P1= 54 ps 178414 s: P2= 87 ps
- 89053 s: P1= 42 ps 89207 s: P2= 77 ps
- 44527 s: P1= 329 ps 44604 s: P2= 789 ps
- 22263 s: P1= 253 ps 22302 s: P2= 534 ps
- 11132 s: P1= 262 ps 11151 s: P2= 551 ps
- 5566 s: P1= 371 ps 5575 s: P2= 628 ps
- 2783 s: P1= 389 ps 2788 s: P2= 811 ps
- 1391 s: P1= 344 ps 1394 s: P2= 1108 ps
- 696 s: P1= 349 ps 697 s: P2= 1223 ps
- 348 s: P1= 400 ps 348 s: P2= 1321 ps
- 174 s: P1= 1011 ps 174 s: P2= 2646 ps
- 87 s: P1= 1338 ps 87 s: P2= 3659 ps
- 43 s: P1= 1739 ps 44 s: P2= 5201 ps



2.5/ TL (13354)Period

MJD 56646 to 56650

Delays

BP0U:

REFDLY = X_P = 52.6 ns (0+C166+BP1I+C153)
CABDLY = X_C = 182.0 ns (C134)

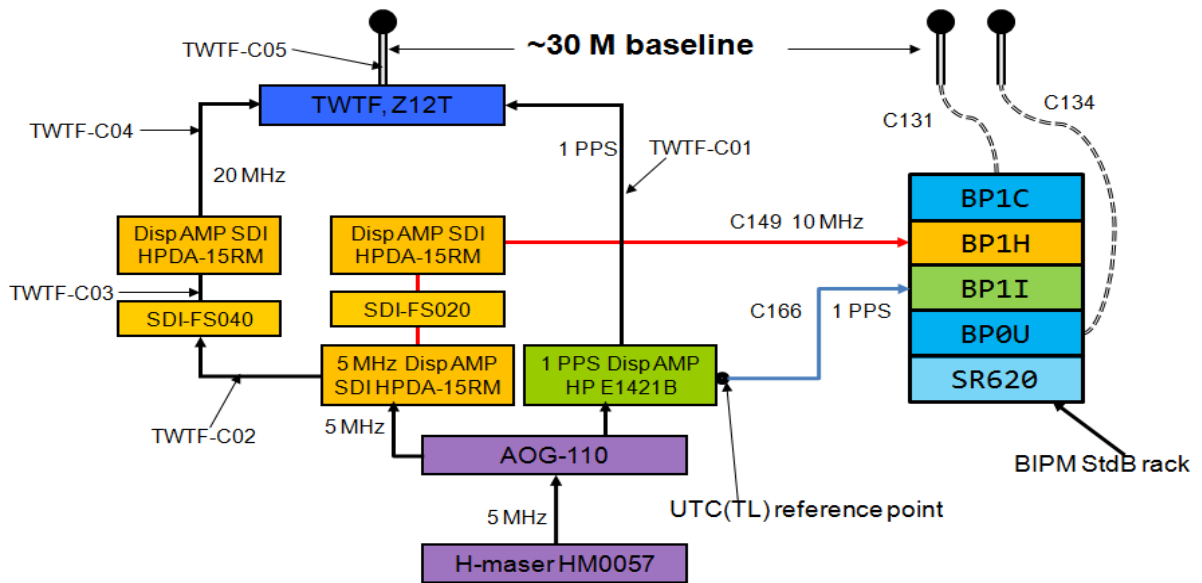
BP1C:

X_O = 181.5 ns (196.77-15.29)
 X_P = 52.6 ns (0+C166+BP1I+C157)
REFDLY = 234.1 ns
CABDLY = X_C = 235.7 ns (C131)

TWTF:

REFDLY = 52.0 ns
CABDLY = 119.8 ns

Setup at the TL



BPOU-TWTF

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 64252
 Computed code bias (P1/P2)/m = -114.054 -114.889
 Computed baseline (X,Y,Z)/m = 8.893 6.858 1.852
 RMS of residuals /m = 0.574

Number of phase differences to fit baseline = 31628
 A priori baseline (X,Y,Z)/m = 8.893 6.858 1.852
 6035 clock jitters computed out of 6352 intervals
 AVE jitter /ps = 0.9 RMS jitter /ps = 68.4

Iter 1 Large residuals L1= 171
 Iter 1 Large residuals L2= 172
 Computed baseline L1 (X,Y,Z)/m = -0.121 0.215 0.039
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.139 0.233 0.051
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 171
 Iter 2 Large residuals L2= 172
 Computed baseline L1 (X,Y,Z)/m = -0.121 0.215 0.039
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.143 0.235 0.052
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = 8.772 7.073 1.891
 Final baseline L2 (X,Y,Z)/m = 8.750 7.093 1.905

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 64290

Global average of individual differences

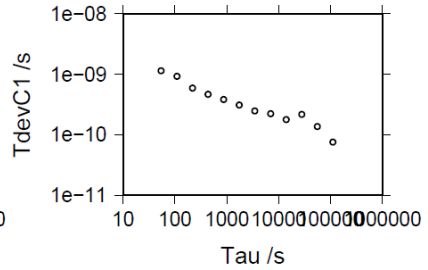
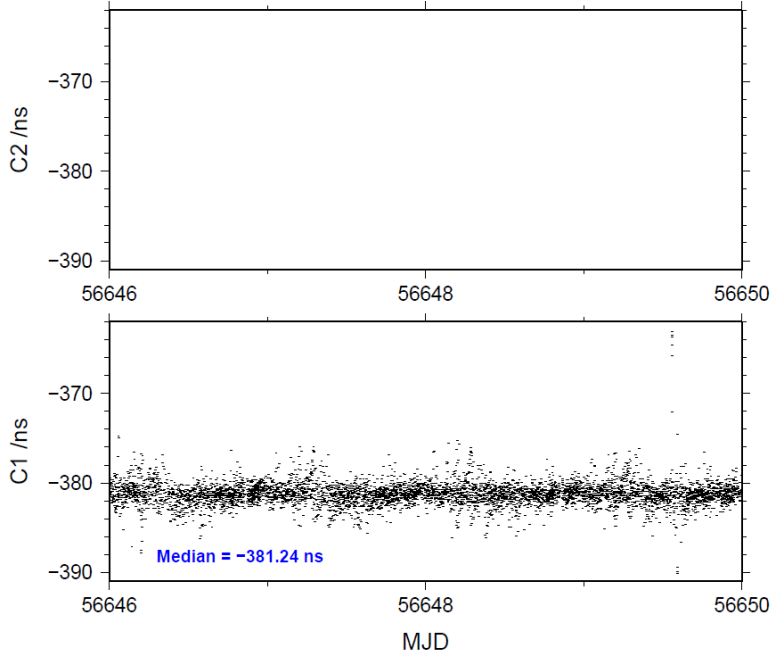
Code #pts, ave/ns, rms/ns
 C1: 63725 -381.165 3.469
 C2: 0-NaN -NaN
 P1: 63615 -380.995 3.579
 P2: 63533 -383.854 3.765

Number of 300s epochs in out file = 1144

Code #pts, median/ns, ave/ns, rms/ns
 C1: 6340 -381.243 -381.218 1.281
 C2: 0 0.000-NaN -NaN
 P1: 6333 -381.098 -381.077 1.426
 P2: 6335 -383.844 -383.903 1.897

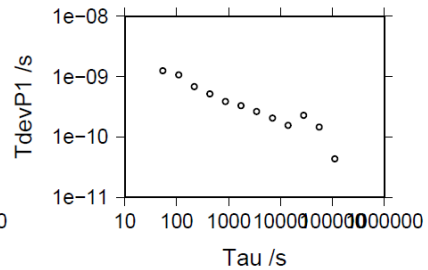
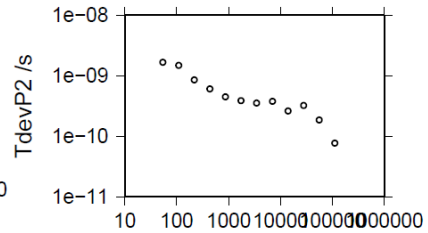
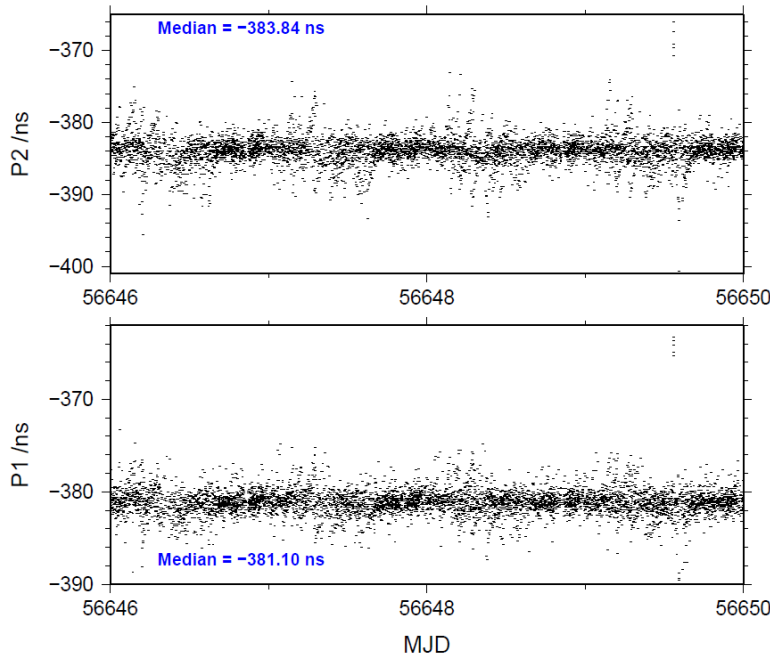
03/20/15 bpOutwtf13354_4

111559 s: C1= 76 ps
 55780 s: C1= 137 ps
 27890 s: C1= 217 ps
 13945 s: C1= 179 ps
 6972 s: C1= 223 ps
 3486 s: C1= 246 ps
 1743 s: C1= 310 ps
 872 s: C1= 385 ps
 436 s: C1= 464 ps
 218 s: C1= 590 ps
 109 s: C1= 921 ps
 54 s: C1= 1134 ps



03/20/15 bpOutwtf13354_4

111683 s: P1= 43 ps 111647 s: P2= 76 ps
 55841 s: P1= 147 ps 55824 s: P2= 187 ps
 27921 s: P1= 230 ps 27912 s: P2= 323 ps
 13960 s: P1= 155 ps 13956 s: P2= 260 ps
 6980 s: P1= 206 ps 6978 s: P2= 376 ps
 3490 s: P1= 266 ps 3489 s: P2= 355 ps
 1745 s: P1= 332 ps 1744 s: P2= 385 ps
 873 s: P1= 388 ps 872 s: P2= 450 ps
 436 s: P1= 521 ps 436 s: P2= 607 ps
 218 s: P1= 681 ps 218 s: P2= 854 ps
 109 s: P1= 1064 ps 109 s: P2= 1477 ps
 55 s: P1= 1244 ps 55 s: P2= 1665 ps



BP1C-TWTF

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 92311
 Computed code bias (P1/P2)/m = -95.632 -96.818
 Computed baseline (X,Y,Z)/m = 7.892 6.369 2.176
 RMS of residuals /m = 0.591

Number of phase differences to fit baseline = 91685
 A priori baseline (X,Y,Z)/m = 7.892 6.369 2.176
 11516 clock jitters computed out of 11516 intervals
 AVE jitter /ps = -0.1 RMS jitter /ps = 6.9

Iter 1 Large residuals L1= 1
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = -0.077 0.128 0.007
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.076 0.135 0.012
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 1
 Iter 2 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = -0.077 0.128 0.007
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.076 0.135 0.012
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = 7.815 6.497 2.183
 Final baseline L2 (X,Y,Z)/m = 7.816 6.505 2.188

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 94114

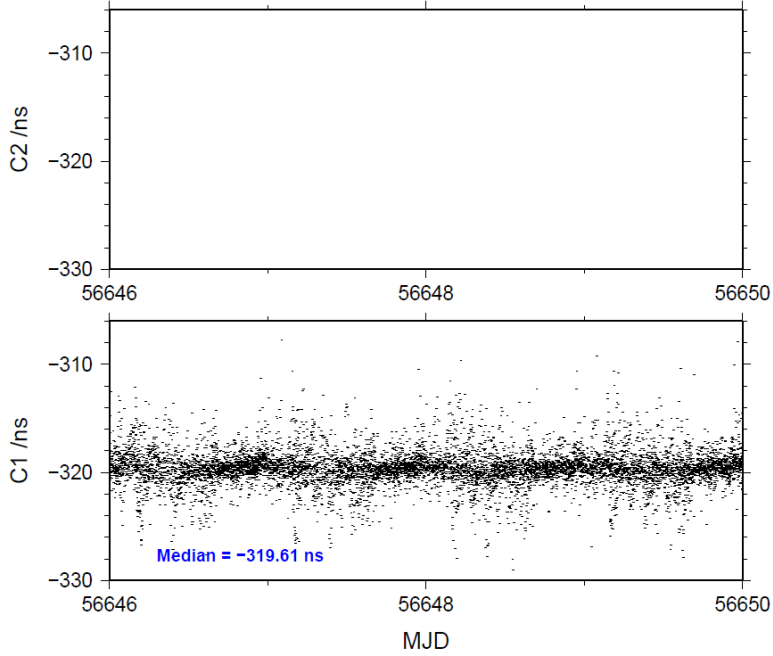
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 93682 -319.595 2.125
 C2: 0-NaN -NaN
 P1: 92289 -319.261 2.004
 P2: 92242 -323.246 2.962

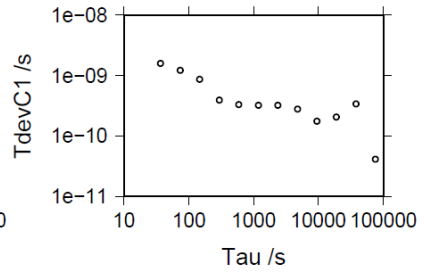
Number of 300s epochs in out file = 1152

Code #pts, median/ns, ave/ns, rms/ns
 C1: 9338 -319.611 -319.611 1.667
 C2: 0 0.000-NaN -NaN
 P1: 9216 -319.286 -319.270 1.599
 P2: 9210 -323.158 -323.242 2.515

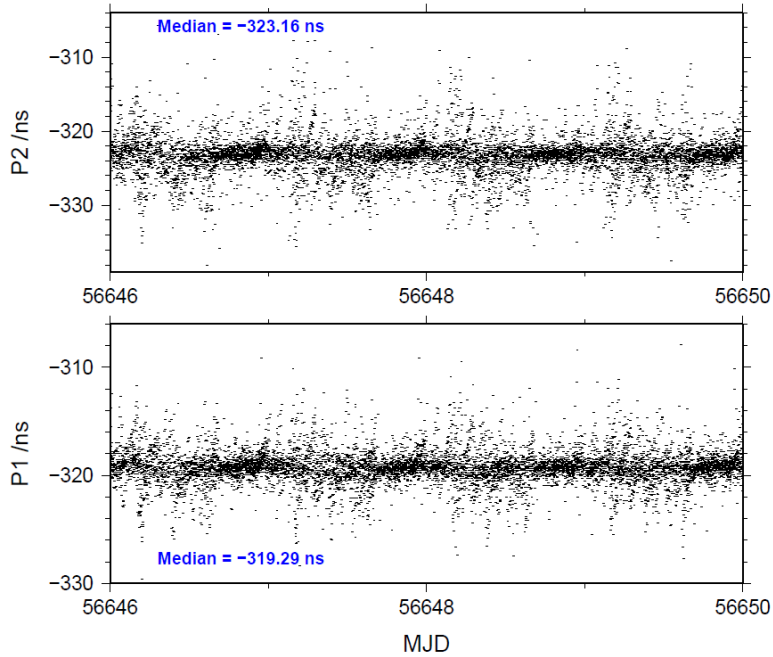
03/20/15 bp1ctwtf13354_4



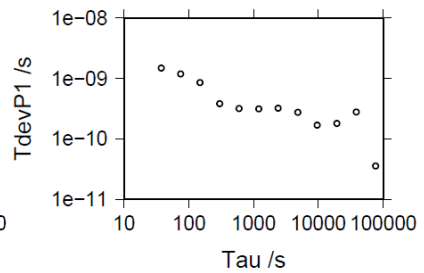
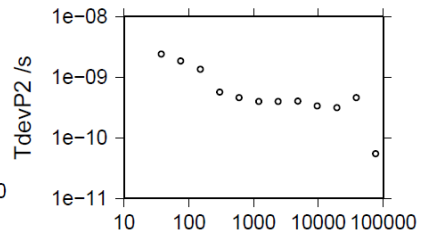
75739 s: C1= 41 ps
37869 s: C1= 338 ps
18935 s: C1= 205 ps
9467 s: C1= 177 ps
4734 s: C1= 280 ps
2367 s: C1= 321 ps
1183 s: C1= 323 ps
692 s: C1= 332 ps
296 s: C1= 394 ps
148 s: C1= 863 ps
74 s: C1= 1222 ps
37 s: C1= 1581 ps



03/20/15 bp1ctwtf13354_4



76742 s: P1= 36 ps 76792 s: P2= 56 ps
38371 s: P1= 280 ps 38396 s: P2= 462 ps
19185 s: P1= 181 ps 19198 s: P2= 315 ps
9593 s: P1= 169 ps 9599 s: P2= 337 ps
4796 s: P1= 274 ps 4799 s: P2= 403 ps
2398 s: P1= 323 ps 2400 s: P2= 397 ps
1199 s: P1= 315 ps 1200 s: P2= 397 ps
600 s: P1= 317 ps 600 s: P2= 459 ps
300 s: P1= 383 ps 300 s: P2= 571 ps
150 s: P1= 858 ps 150 s: P2= 1355 ps
75 s: P1= 1191 ps 75 s: P2= 1863 ps
37 s: P1= 1475 ps 38 s: P2= 2401 ps



2.6/ BIPM (14010)Period

MJD 56667 to 56674

Delays

All measurements at BIPM carried out by L. Tisserand.

Equipment used to measure internal delay of local receiver is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 4680, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

Equipment used to measure internal delay of traveling receivers is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 5482, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

BP0R:

$$X_O = 238.2 \text{ ns} \quad (247.9-18.4+8.7)$$

$$X_P = 12.8 \text{ ns} \quad (C1+BIPM9)$$

$$\text{REFDLY} = 251.0 \text{ ns}$$

$$\text{CABDLY} = X_C = 133.4 \text{ ns} \quad (C113)$$

BP0U:

$$\text{REFDLY} = X_P = 54.2 \text{ ns} \quad (B1+C166+BP1I+C153)$$

$$\text{CABDLY} = X_C = 182.0 \text{ ns} \quad (C134)$$

BP1C:

$$X_O = 206.7 \text{ ns} \quad (222.2-15.3)$$

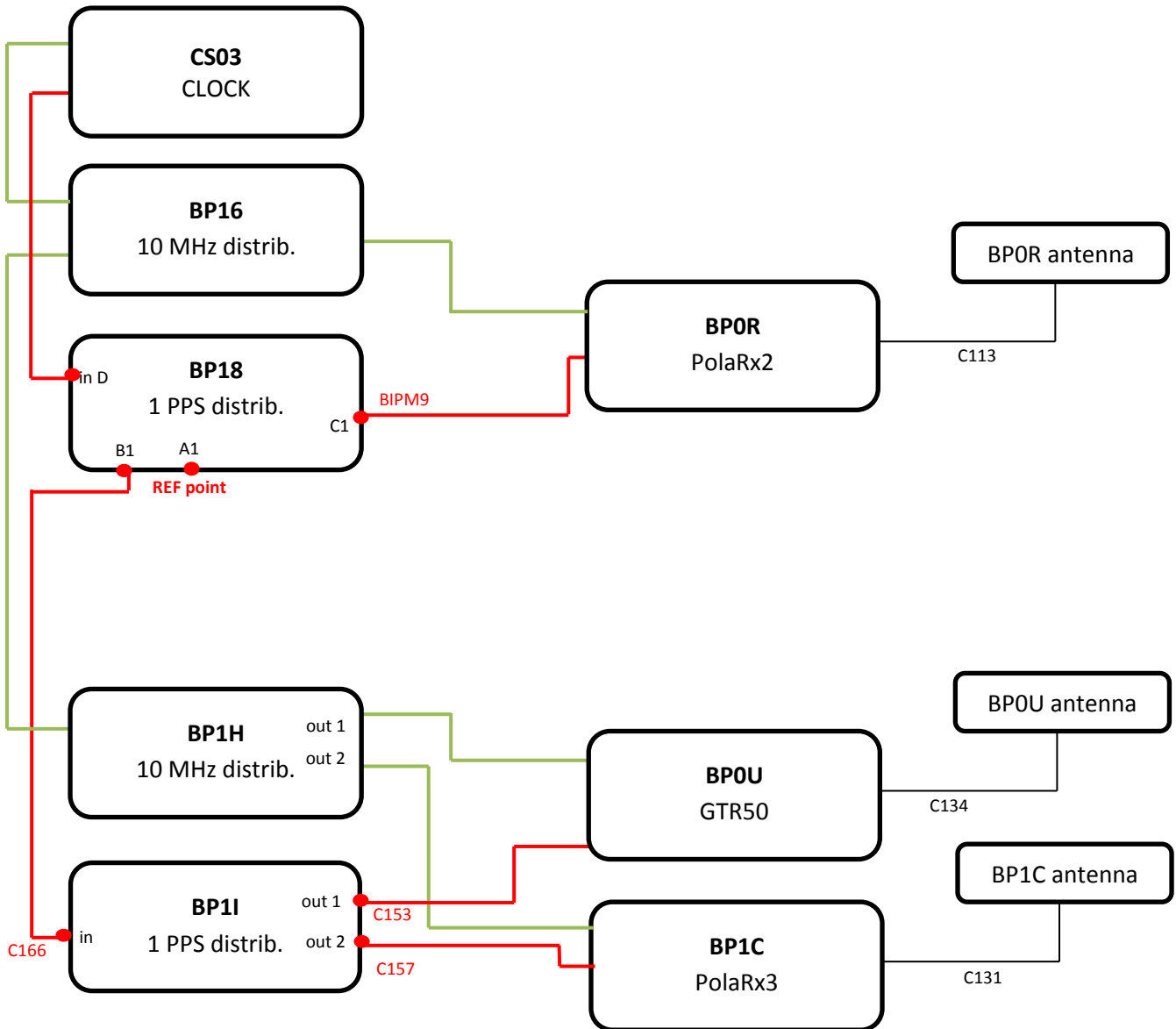
$$X_P = 54.2 \text{ ns} \quad (B1+C166+BP1I+C157)$$

$$\text{REFDLY} = 260.9 \text{ ns}$$

$$\text{CABDLY} = X_C = 235.7 \text{ ns} \quad (C131)$$

Setup at the BIPM

1 PPS ————
 10 MHz ————



BP0U-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 82759
 Computed code bias (P1/P2)/m = -34.175 -33.176
 Computed baseline (X,Y,Z)/m = 2.654 0.813 -2.705
 RMS of residuals /m = 0.616

Number of phase differences to fit baseline = 78263
 A priori baseline (X,Y,Z)/m = 2.654 0.813 -2.705
 15463 clock jitters computed out of 15590 intervals
 AVE jitter /ps = -0.2 RMS jitter /ps = 28.9

Iter 1 Large residuals L1= 275
 Iter 1 Large residuals L2= 275
 Computed baseline L1 (X,Y,Z)/m = 0.090 0.007 0.161
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.092 0.008 0.169
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 275
 Iter 2 Large residuals L2= 275
 Computed baseline L1 (X,Y,Z)/m = 0.090 0.007 0.161
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.092 0.008 0.169
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = 2.744 0.821 -2.544
 Final baseline L2 (X,Y,Z)/m = 2.746 0.821 -2.536

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 87641

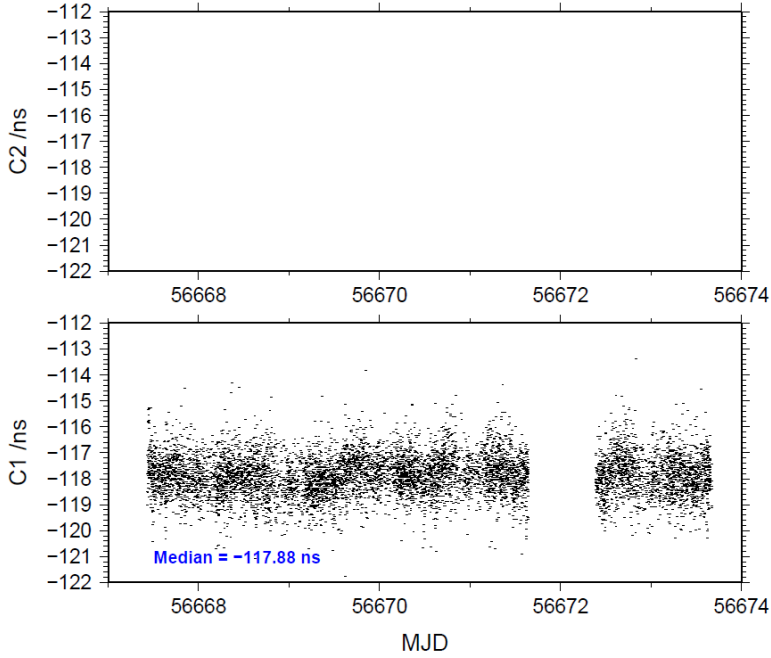
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 82751 -117.870 1.408
 C2: 0-NaN -NaN
 P1: 82713 -114.431 2.081
 P2: 82715 -111.113 2.287

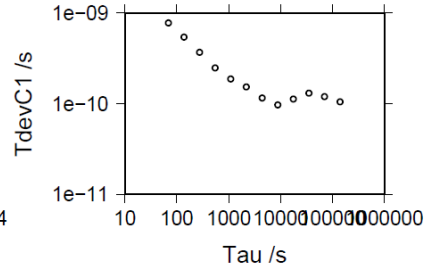
Number of 300s epochs in out file = 1677

Code #pts, median/ns, ave/ns, rms/ns
 C1: 8238 -117.878 -117.867 0.786
 C2: 0 0.000-NaN -NaN
 P1: 8236 -114.457 -114.452 1.105
 P2: 8234 -111.110 -111.097 1.316

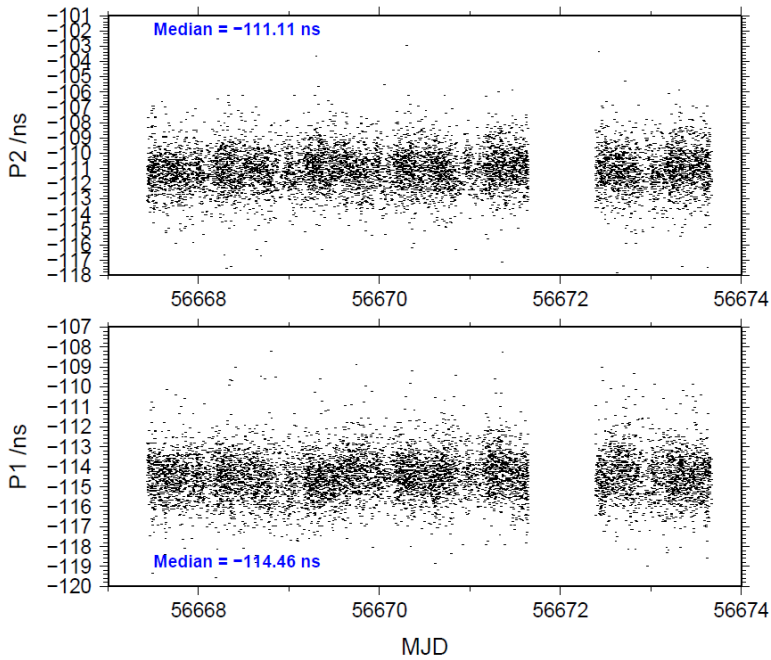
03/20/15 bp0ubp0r14010_7



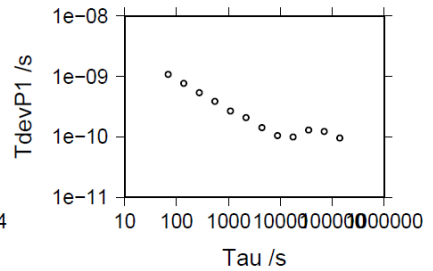
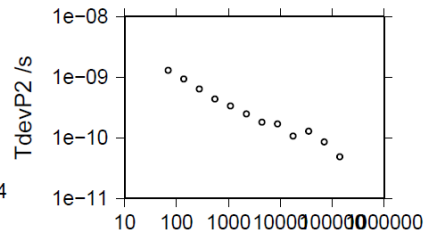
- 141050 s: C1= 105 ps
- 70525 s: C1= 120 ps
- 35263 s: C1= 130 ps
- 17631 s: C1= 112 ps
- 8816 s: C1= 97 ps
- 4408 s: C1= 116 ps
- 2204 s: C1= 153 ps
- 1102 s: C1= 187 ps
- 551 s: C1= 247 ps
- 276 s: C1= 366 ps
- 138 s: C1= 541 ps
- 69 s: C1= 772 ps



03/20/15 bp0ubp0r14010_7



- 141084 s: P1= 97 ps 141119 s: P2= 49 ps
- 70542 s: P1= 123 ps 70559 s: P2= 86 ps
- 35271 s: P1= 130 ps 35280 s: P2= 129 ps
- 17636 s: P1= 101 ps 17640 s: P2= 107 ps
- 8818 s: P1= 105 ps 8820 s: P2= 168 ps
- 4409 s: P1= 142 ps 4410 s: P2= 181 ps
- 2204 s: P1= 209 ps 2205 s: P2= 249 ps
- 1102 s: P1= 270 ps 1102 s: P2= 335 ps
- 551 s: P1= 387 ps 551 s: P2= 437 ps
- 276 s: P1= 539 ps 276 s: P2= 642 ps
- 138 s: P1= 772 ps 138 s: P2= 938 ps
- 69 s: P1= 1087 ps 69 s: P2= 1300 ps



BP1C-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 112318
 Computed code bias (P1/P2)/m = -23.277 -22.632
 Computed baseline (X,Y,Z)/m = 0.754 0.185 -0.811
 RMS of residuals /m = 0.542

Number of phase differences to fit baseline = 111095
 A priori baseline (X,Y,Z)/m = 0.754 0.185 -0.811
 16816 clock jitters computed out of 16816 intervals
 AVE jitter /ps = 0.2 RMS jitter /ps = 5.0

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = -0.033 0.018 0.034
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.040 0.020 0.037
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = 0.721 0.203 -0.777
 Final baseline L2 (X,Y,Z)/m = 0.713 0.205 -0.774

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 113662

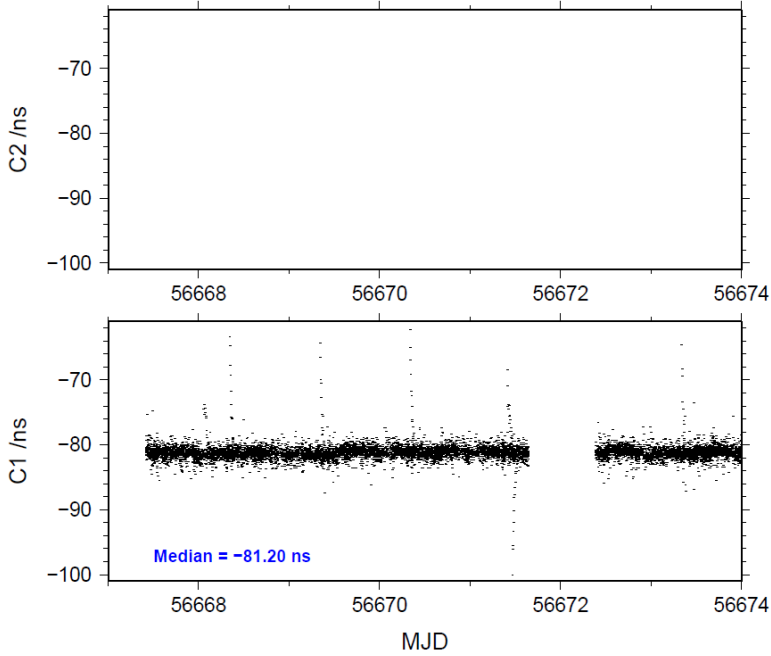
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 113390 -81.165 1.752
 C2: 0-NaN -NaN
 P1: 112232 -77.648 2.027
 P2: 112232 -75.483 2.059

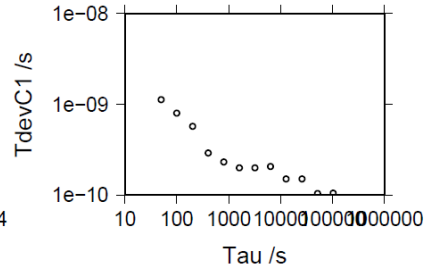
Number of 300s epochs in out file = 1685

Code #pts, median/ns, ave/ns, rms/ns
 C1: 11310 -81.199 -81.171 1.131
 C2: 0 0.000-NaN -NaN
 P1: 11198 -77.680 -77.662 1.305
 P2: 11196 -75.528 -75.486 1.184

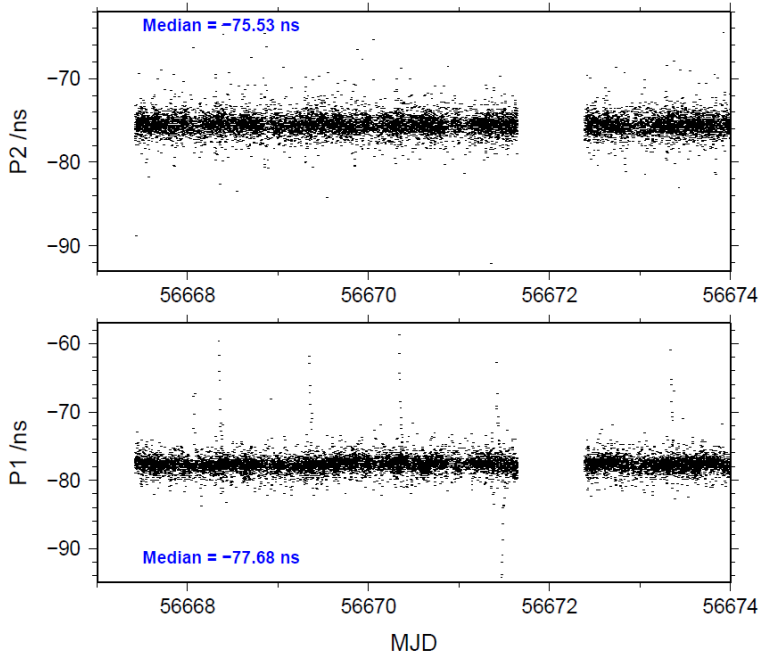
03/20/15 bp1cbp0r14010_7



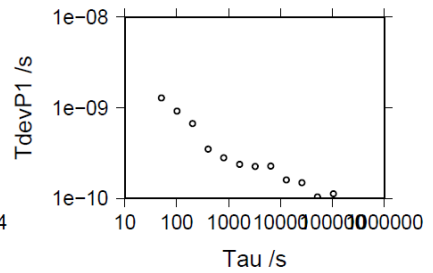
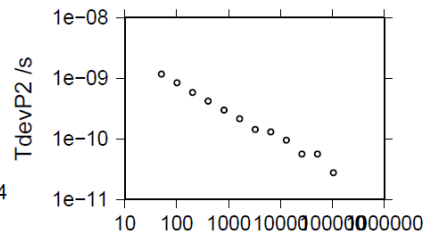
- 103007 s: C1= 106 ps
- 51503 s: C1= 105 ps
- 25752 s: C1= 151 ps
- 12876 s: C1= 151 ps
- 6438 s: C1= 208 ps
- 3219 s: C1= 199 ps
- 1609 s: C1= 200 ps
- 805 s: C1= 232 ps
- 402 s: C1= 291 ps
- 201 s: C1= 571 ps
- 101 s: C1= 800 ps
- 50 s: C1= 1121 ps



03/20/15 bp1cbp0r14010_7



- 104037 s: P1= 113 ps
- 52018 s: P1= 104 ps
- 26009 s: P1= 150 ps
- 13005 s: P1= 160 ps
- 6502 s: P1= 229 ps
- 3251 s: P1= 225 ps
- 1626 s: P1= 239 ps
- 813 s: P1= 283 ps
- 406 s: P1= 351 ps
- 203 s: P1= 671 ps
- 102 s: P1= 924 ps
- 51 s: P1= 1284 ps
- 104066 s: P2= 28 ps
- 52028 s: P2= 56 ps
- 26014 s: P2= 56 ps
- 13007 s: P2= 95 ps
- 6503 s: P2= 129 ps
- 3252 s: P2= 143 ps
- 1626 s: P2= 215 ps
- 813 s: P2= 298 ps
- 406 s: P2= 418 ps
- 203 s: P2= 582 ps
- 102 s: P2= 847 ps
- 51 s: P2= 1172 ps



2.7/ NMIJ (14058)Period

MJD 56715 to 56722

Delays

BP0U:

$$\begin{aligned} \text{REFDLY} = X_P &= 33.2 \text{ ns} && (-19.4+C166+BP1I+C153) \\ \text{CABDLY} = X_C &= 182.0 \text{ ns} && (C134) \end{aligned}$$

BP1C:

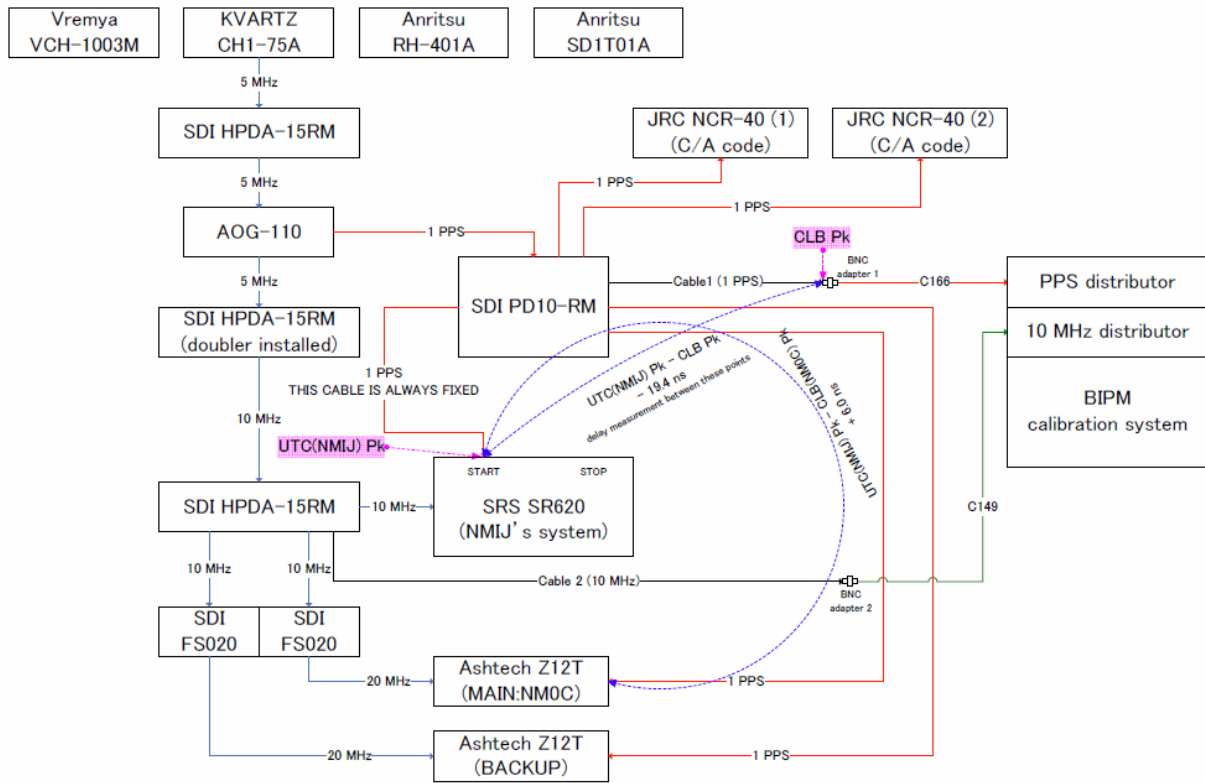
$$\begin{aligned} X_O &= 183.5 \text{ ns} && (198.8-15.3) \\ X_P &= 33.2 \text{ ns} && (-19.4+C166+BP1I+C157) \\ \text{REFDLY} &= 216.7 \text{ ns} \\ \text{CABDLY} = X_C &= 235.7 \text{ ns} && (C131) \end{aligned}$$

NM0C:

$$\begin{aligned} X_O &= 10.6+15.8 = 26.4 \text{ ns} \\ X_P &= 6.0 \text{ ns} \\ \text{REFDLY} &= 32.4 \text{ ns} \\ \text{CABDLY} &= 234.1 \text{ ns} \end{aligned}$$

REFDLY value for NM0C documented in a message 23 June 2014 by T. Suzuyama.
Measurements carried out in March 2011. Set-up unchanged.

Setup at the NMIJ



BP0U-NM0C

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 102930
 Computed code bias (P1/P2)/m = -149.009 -151.117
 Computed baseline (X,Y,Z)/m = 3.022 1.874 0.943
 RMS of residuals /m = 0.684

Number of phase differences to fit baseline = 55282
 A priori baseline (X,Y,Z)/m = 3.022 1.874 0.943
 11020 clock jitters computed out of 11523 intervals
 AVE jitter /ps = 3.9 RMS jitter /ps = 65.5

Iter 1 Large residuals L1= 590
 Iter 1 Large residuals L2= 591
 Computed baseline L1 (X,Y,Z)/m = -0.081 0.093 0.167
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.086 0.093 0.182
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 590
 Iter 2 Large residuals L2= 591
 Computed baseline L1 (X,Y,Z)/m = -0.082 0.093 0.169
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.089 0.094 0.184
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = 2.940 1.966 1.111
 Final baseline L2 (X,Y,Z)/m = 2.933 1.968 1.127

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 102965

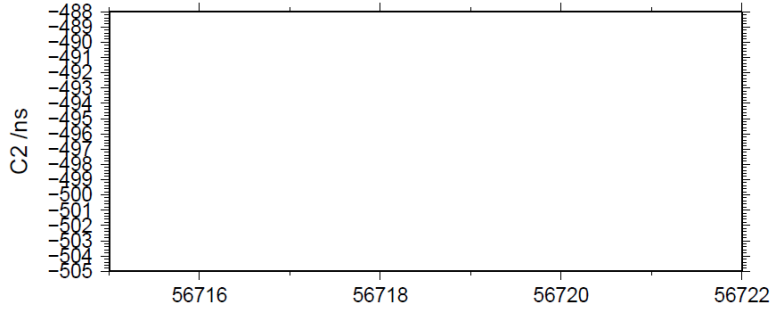
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 102900 -498.798 2.331
 C2: 0-NaN -NaN
 P1: 102865 -497.513 2.414
 P2: 102866 -504.581 2.720

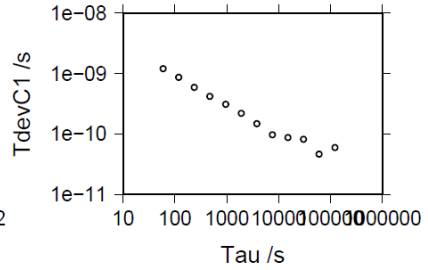
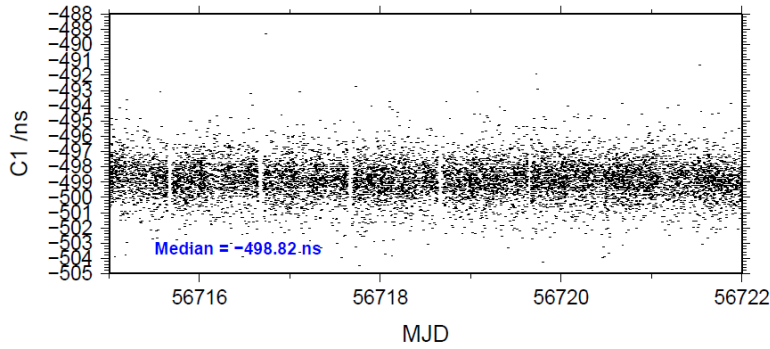
Number of 300s epochs in out file = 1952

Code #pts, median/ns, ave/ns, rms/ns
 C1: 10204 -498.825 -498.822 1.214
 C2: 0 0.000-NaN -NaN
 P1: 10201 -497.570 -497.532 1.374
 P2: 10203 -504.580 -504.583 1.626

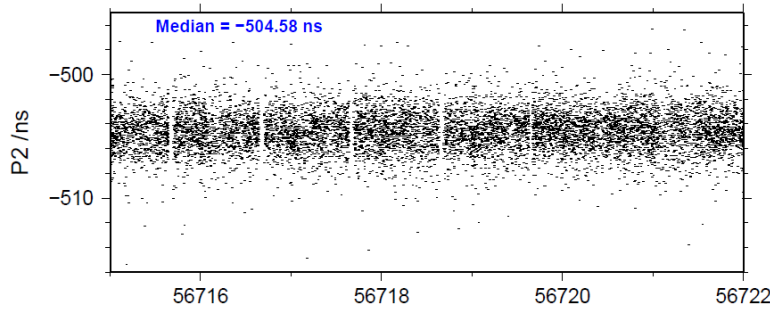
03/20/15 bp0unm0c14058_7



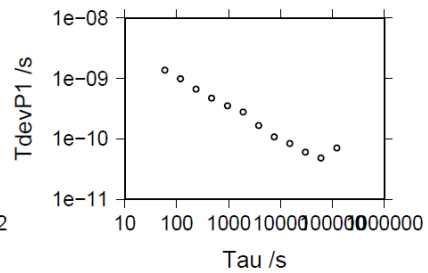
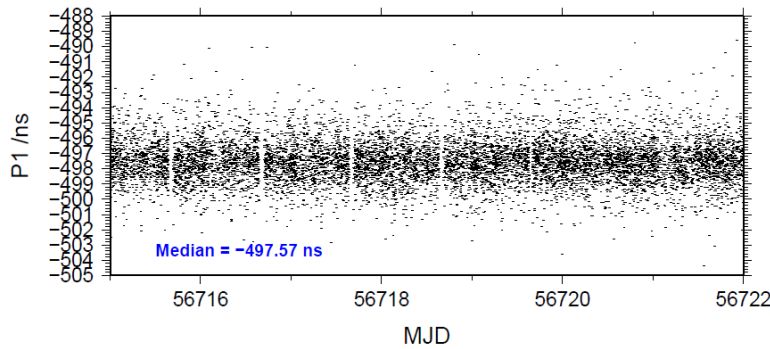
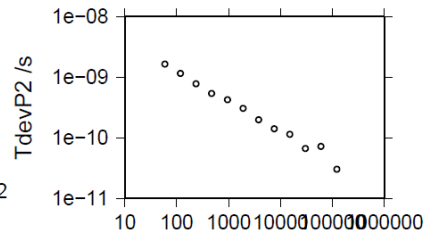
- 121338 s: C1= 60 ps
- 60669 s: C1= 46 ps
- 30335 s: C1= 82 ps
- 15167 s: C1= 88 ps
- 7584 s: C1= 97 ps
- 3792 s: C1= 148 ps
- 1896 s: C1= 219 ps
- 948 s: C1= 311 ps
- 474 s: C1= 422 ps
- 237 s: C1= 589 ps
- 118 s: C1= 868 ps
- 59 s: C1= 1209 ps



03/20/15 bp0unm0c14058_7



- 121374 s: P1= 71 ps 121360 s: P2= 30 ps
- 60687 s: P1= 49 ps 60675 s: P2= 72 ps
- 30344 s: P1= 61 ps 30338 s: P2= 66 ps
- 15172 s: P1= 85 ps 15169 s: P2= 113 ps
- 7586 s: P1= 109 ps 7584 s: P2= 141 ps
- 3793 s: P1= 168 ps 3792 s: P2= 198 ps
- 1896 s: P1= 278 ps 1896 s: P2= 306 ps
- 948 s: P1= 355 ps 948 s: P2= 424 ps
- 474 s: P1= 471 ps 474 s: P2= 537 ps
- 237 s: P1= 669 ps 237 s: P2= 776 ps
- 119 s: P1= 982 ps 119 s: P2= 1159 ps
- 59 s: P1= 1371 ps 59 s: P2= 1647 ps



BP1C-NM0C

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 127255
 Computed code bias (P1/P2)/m = -131.365 -133.760
 Computed baseline (X,Y,Z)/m = 3.207 2.175 1.345
 RMS of residuals /m = 0.601

Number of phase differences to fit baseline = 126656
 A priori baseline (X,Y,Z)/m = 3.207 2.175 1.345
 20147 clock jitters computed out of 20147 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 4.4

Iter 1 Large residuals L1= 2
 Iter 1 Large residuals L2= 2
 Computed baseline L1 (X,Y,Z)/m = 0.013 -0.026 -0.044
 RMS of residuals L1 /m = 0.002
 Computed baseline L2 (X,Y,Z)/m = 0.013 -0.025 -0.044
 RMS of residuals L2 /m = 0.002

Iter 2 Large residuals L1= 2
 Iter 2 Large residuals L2= 2
 Computed baseline L1 (X,Y,Z)/m = 0.013 -0.026 -0.044
 RMS of residuals L1 /m = 0.002
 Computed baseline L2 (X,Y,Z)/m = 0.013 -0.025 -0.044
 RMS of residuals L2 /m = 0.002

Final baseline L1 (X,Y,Z)/m = 3.221 2.149 1.302
 Final baseline L2 (X,Y,Z)/m = 3.221 2.150 1.301

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 127513

Global average of individual differences

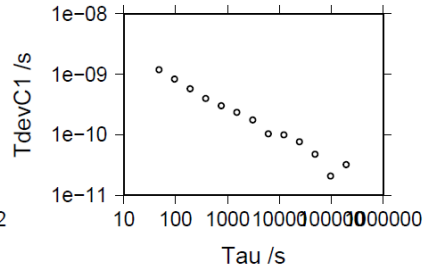
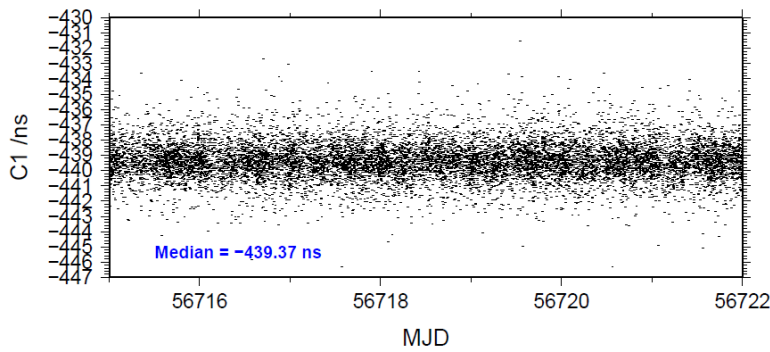
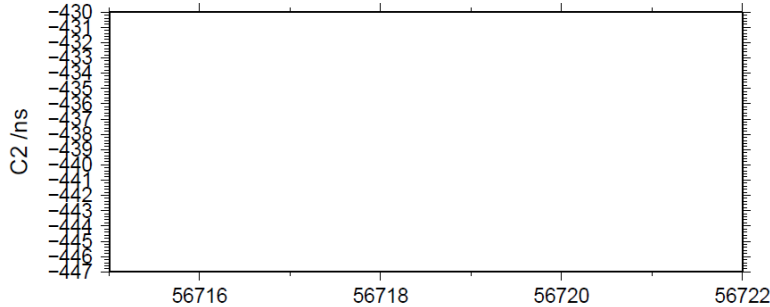
Code #pts, ave/ns, rms/ns
 C1: 127210 -439.311 2.347
 C2: 0-NaN -NaN
 P1: 127192 -438.079 1.980
 P2: 127201 -446.068 2.443

Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 12710 -439.370 -439.349 1.182
 C2: 0 0.000-NaN -NaN
 P1: 12709 -438.123 -438.100 1.052
 P2: 12710 -446.036 -446.064 1.376

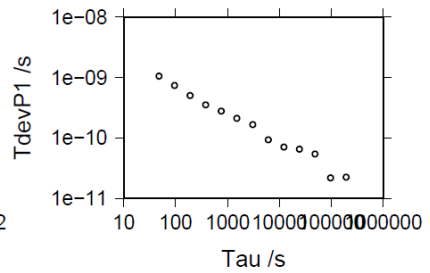
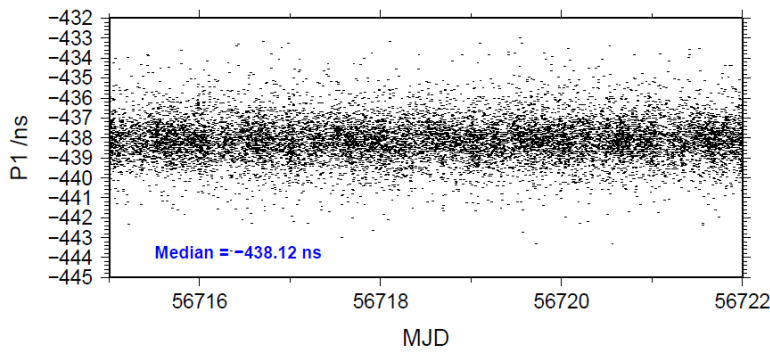
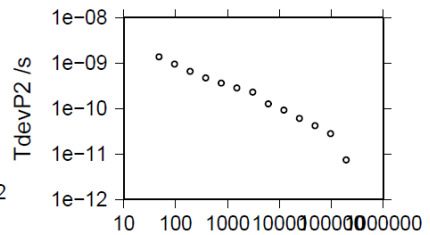
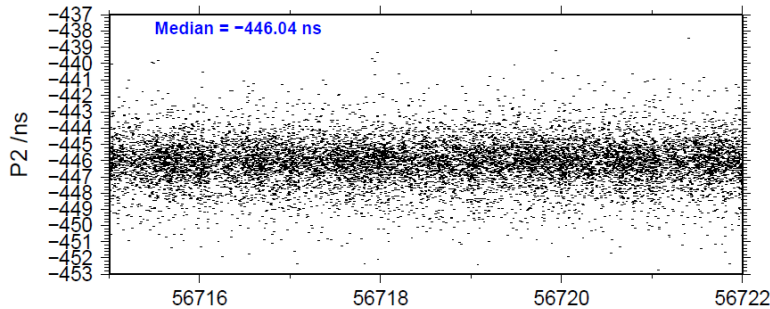
03/20/15 bp1cnm0c14058_7

- 194825 s: C1= 32 ps
- 97413 s: C1= 21 ps
- 48706 s: C1= 48 ps
- 24353 s: C1= 77 ps
- 12177 s: C1= 101 ps
- 6088 s: C1= 103 ps
- 3044 s: C1= 176 ps
- 1522 s: C1= 236 ps
- 761 s: C1= 301 ps
- 381 s: C1= 399 ps
- 190 s: C1= 573 ps
- 95 s: C1= 834 ps
- 48 s: C1= 1189 ps



03/20/15 bp1cnm0c14058_7

- | | |
|---------------------|--------------------|
| 194840 s: P1= 23 ps | 194825 s: P2= 7 ps |
| 97420 s: P1= 22 ps | 97413 s: P2= 28 ps |
| 48710 s: P1= 54 ps | 48706 s: P2= 42 ps |
| 24355 s: P1= 65 ps | 24353 s: P2= 61 ps |
| 12178 s: P1= 71 ps | 12177 s: P2= 93 ps |
| 6089 s: P1= 93 ps | 6088 s: P2= 127 ps |
| 3044 s: P1= 168 ps | 3044 s: P2= 229 ps |
| 1522 s: P1= 211 ps | 1522 s: P2= 285 ps |
| 761 s: P1= 280 ps | 761 s: P2= 362 ps |
| 381 s: P1= 355 ps | 381 s: P2= 472 ps |
| 190 s: P1= 507 ps | 190 s: P2= 663 ps |
| 95 s: P1= 742 ps | 95 s: P2= 953 ps |
| 48 s: P1= 1054 ps | 48 s: P2= 1389 ps |



2.8/ NICT (14068)Period

MJD 56725 to 56731

Delays

BP0U:

$$\text{REFDLY} = X_P = 427 + 52.6 = 479.6 \text{ ns} \quad (427 + C166 + BP1I + C153)$$

$$\text{CABDLY} = X_C = 182.0 \text{ ns} \quad (C134)$$

BP1C:

$$X_O = 186.9 \text{ ns} \quad (202.3 - 15.4)$$

$$X_P = 427 + 52.6 = 479.6 \text{ ns} \quad (427 + C166 + BP1I + C157)$$

$$\text{REFDLY} = 666.5 \text{ ns}$$

$$\text{CABDLY} = X_C = 235.7 \text{ ns} \quad (C131)$$

SEPA:

$$\text{REFDLY} = 397.4 \text{ ns}$$

$$\text{CABDLY} = 213.4 \text{ ns}$$

NC02:

$$\text{REFDLY} = 421.0 \text{ ns}$$

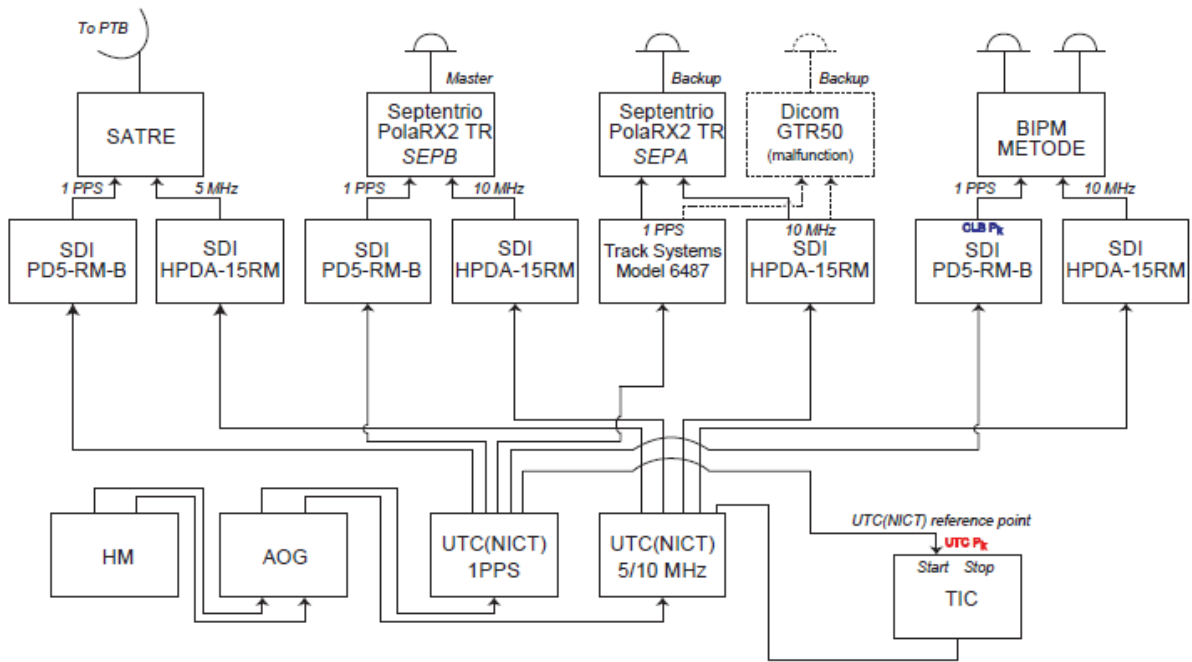
$$\text{CABDLY} = 248.5 \text{ ns}$$

REFDLY values for SEPA and NC02 documented in a message 23 June 2014 by T. Gotoh.

“Yes, our receivers are PolaRx2 TR.

Reported reference delays are output 1 PPS without 8.7 ns correction.”

Setup at the NICT



BPOU-SEPA

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 96667
 Computed code bias (P1/P2)/m = -137.300 -137.115
 Computed baseline (X,Y,Z)/m = -5.305 2.734 -4.722
 RMS of residuals /m = 0.599

Number of phase differences to fit baseline = 66145
 A priori baseline (X,Y,Z)/m = -5.305 2.734 -4.722
 12510 clock jitters computed out of 12924 intervals
 AVE jitter /ps = 1.0 RMS jitter /ps = 58.5

Iter 1 Large residuals L1= 91
 Iter 1 Large residuals L2= 93
 Computed baseline L1 (X,Y,Z)/m = -0.211 0.169 0.248
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.207 0.174 0.257
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 91
 Iter 2 Large residuals L2= 93
 Computed baseline L1 (X,Y,Z)/m = -0.211 0.170 0.248
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.208 0.174 0.257
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -5.516 2.904 -4.475
 Final baseline L2 (X,Y,Z)/m = -5.513 2.908 -4.465

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 96734

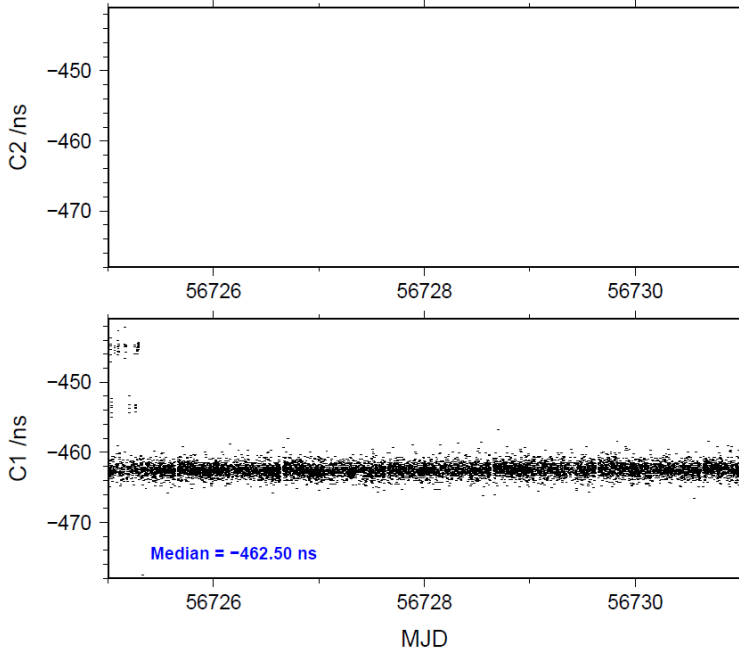
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 95766 -462.349 2.116
 C2: 0-NaN -NaN
 P1: 95718 -459.083 2.566
 P2: 95721 -458.483 2.778

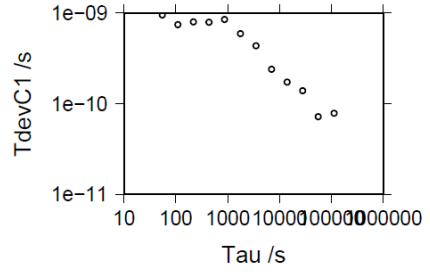
Number of 300s epochs in out file = 1691

Code #pts, median/ns, ave/ns, rms/ns
 C1: 9447 -462.500 -462.378 1.611
 C2: 0 0.000-NaN -NaN
 P1: 9446 -459.286 -459.125 1.805
 P2: 9443 -458.622 -458.494 2.000

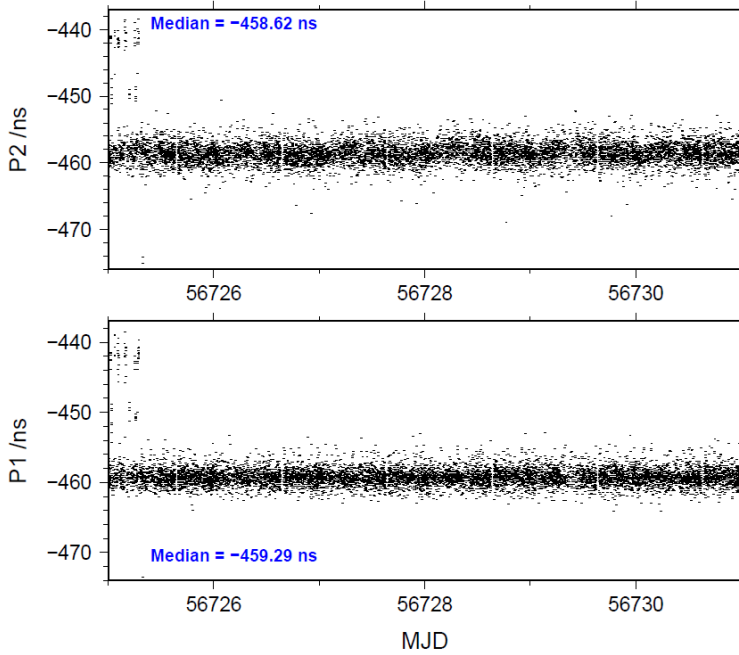
03/20/15 bp0usepa14068_6



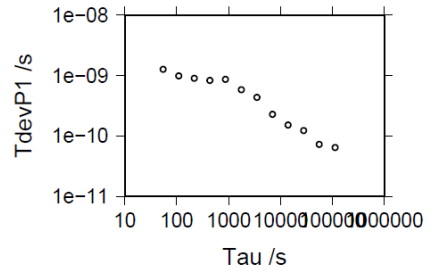
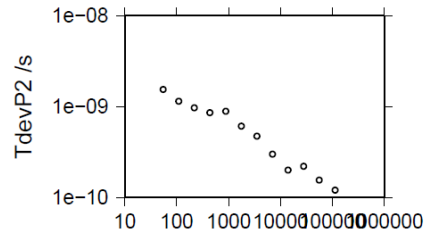
112330 s: C1= 78 ps
 56165 s: C1= 72 ps
 28082 s: C1= 139 ps
 14041 s: C1= 174 ps
 7021 s: C1= 240 ps
 3510 s: C1= 435 ps
 1755 s: C1= 591 ps
 878 s: C1= 850 ps
 439 s: C1= 791 ps
 219 s: C1= 796 ps
 110 s: C1= 743 ps
 55 s: C1= 948 ps



03/20/15 bp0usepa14068_6



112342 s: P1= 65 ps 112378 s: P2= 120 ps
 56171 s: P1= 73 ps 56189 s: P2= 156 ps
 28085 s: P1= 124 ps 28094 s: P2= 221 ps
 14043 s: P1= 153 ps 14047 s: P2= 199 ps
 7021 s: P1= 230 ps 7024 s: P2= 300 ps
 3511 s: P1= 435 ps 3512 s: P2= 472 ps
 1755 s: P1= 586 ps 1756 s: P2= 609 ps
 878 s: P1= 867 ps 878 s: P2= 888 ps
 439 s: P1= 835 ps 439 s: P2= 855 ps
 219 s: P1= 900 ps 219 s: P2= 968 ps
 110 s: P1= 981 ps 110 s: P2= 1147 ps
 55 s: P1= 1263 ps 55 s: P2= 1537 ps



BP0U-NC02

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 96606
 Computed code bias (P1/P2)/m = -141.489 -141.706
 Computed baseline (X,Y,Z)/m = -6.876 4.596 -7.793
 RMS of residuals /m = 0.692

Number of phase differences to fit baseline = 65701
 A priori baseline (X,Y,Z)/m = -6.876 4.596 -7.793
 12537 clock jitters computed out of 13073 intervals
 AVE jitter /ps = 0.4 RMS jitter /ps = 58.4

Iter 1 Large residuals L1= 87
 Iter 1 Large residuals L2= 87
 Computed baseline L1 (X,Y,Z)/m = -0.070 0.148 0.251
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.056 0.140 0.251
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 87
 Iter 2 Large residuals L2= 87
 Computed baseline L1 (X,Y,Z)/m = -0.070 0.148 0.251
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.056 0.140 0.251
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -6.946 4.745 -7.542
 Final baseline L2 (X,Y,Z)/m = -6.932 4.736 -7.542

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 96696

Global average of individual differences

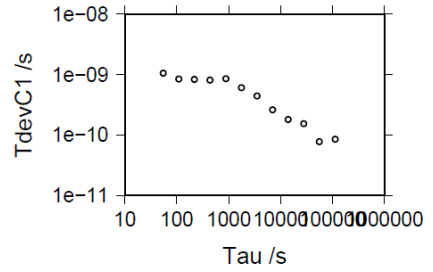
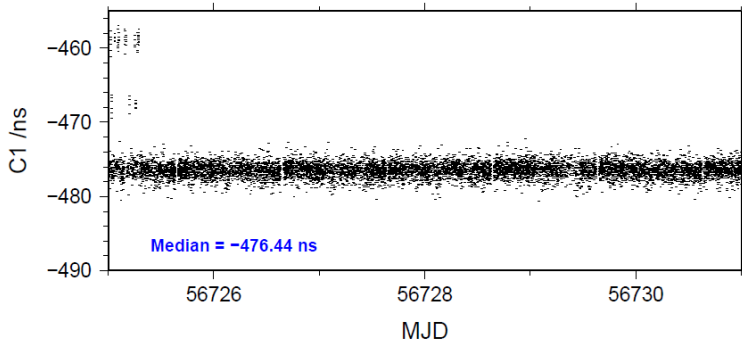
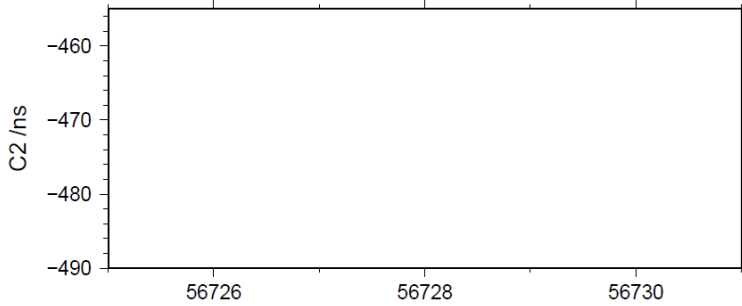
Code #pts, ave/ns, rms/ns
 C1: 95729 -476.312 2.259
 C2: 0-NaN -NaN
 P1: 95648 -472.853 2.874
 P2: 95664 -473.548 3.094

Number of 300s epochs in out file = 1691

Code #pts, median/ns, ave/ns, rms/ns
 C1: 9439 -476.436 -476.338 1.691
 C2: 0 0.000-NaN -NaN
 P1: 9441 -473.060 -472.896 1.931
 P2: 9435 -473.661 -473.561 2.109

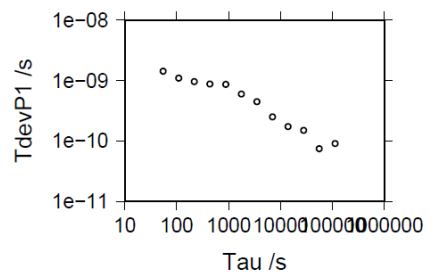
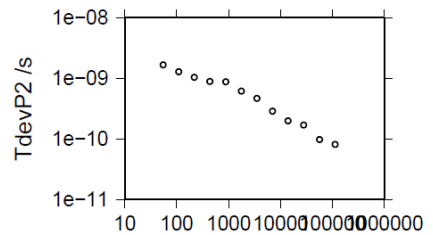
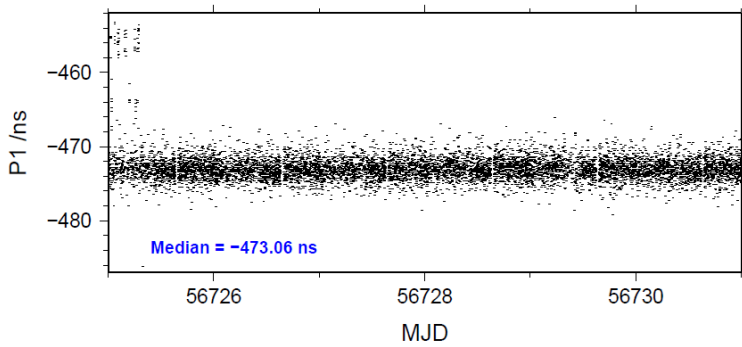
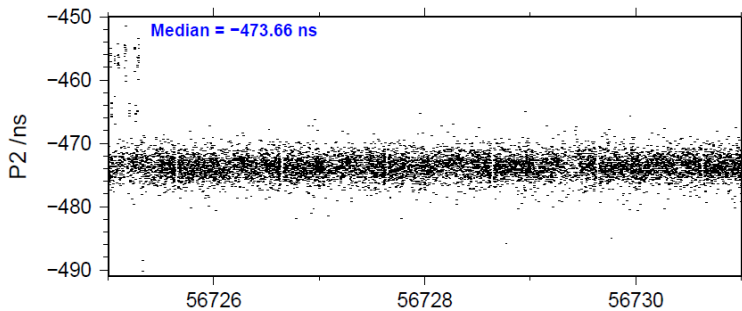
03/20/15 bp0unc0214068_6

112425 s: C1= 86 ps
 56213 s: C1= 78 ps
 28106 s: C1= 154 ps
 14053 s: C1= 180 ps
 7027 s: C1= 260 ps
 3513 s: C1= 444 ps
 1757 s: C1= 603 ps
 878 s: C1= 859 ps
 439 s: C1= 809 ps
 220 s: C1= 832 ps
 110 s: C1= 846 ps
 55 s: C1= 1053 ps



03/20/15 bp0unc0214068_6

112401 s: P1= 91 ps 112473 s: P2= 82 ps
 56201 s: P1= 75 ps 56236 s: P2= 98 ps
 28100 s: P1= 151 ps 28118 s: P2= 168 ps
 14050 s: P1= 175 ps 14059 s: P2= 198 ps
 7025 s: P1= 252 ps 7030 s: P2= 286 ps
 3513 s: P1= 446 ps 3515 s: P2= 466 ps
 1756 s: P1= 598 ps 1757 s: P2= 612 ps
 878 s: P1= 861 ps 879 s: P2= 881 ps
 439 s: P1= 874 ps 439 s: P2= 888 ps
 220 s: P1= 964 ps 220 s: P2= 1038 ps
 110 s: P1= 1103 ps 110 s: P2= 1280 ps
 55 s: P1= 1430 ps 55 s: P2= 1680 ps



BP1C-SEPA

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 153069
 Computed code bias (P1/P2)/m = -120.849 -121.010
 Computed baseline (X,Y,Z)/m = -6.913 1.518 -4.686
 RMS of residuals /m = 0.586

Number of phase differences to fit baseline = 151775
 A priori baseline (X,Y,Z)/m = -6.913 1.518 -4.686
 17270 clock jitters computed out of 17270 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 4.2

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 3
 Computed baseline L1 (X,Y,Z)/m = -0.025 -0.018 -0.012
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.023 -0.017 -0.011
 RMS of residuals L2 /m = 0.005

Iter 2 Large residuals L1= 0
 Iter 2 Large residuals L2= 3
 Computed baseline L1 (X,Y,Z)/m = -0.025 -0.018 -0.012
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.023 -0.017 -0.011
 RMS of residuals L2 /m = 0.005

Final baseline L1 (X,Y,Z)/m = -6.937 1.500 -4.698
 Final baseline L2 (X,Y,Z)/m = -6.936 1.501 -4.697

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 155672

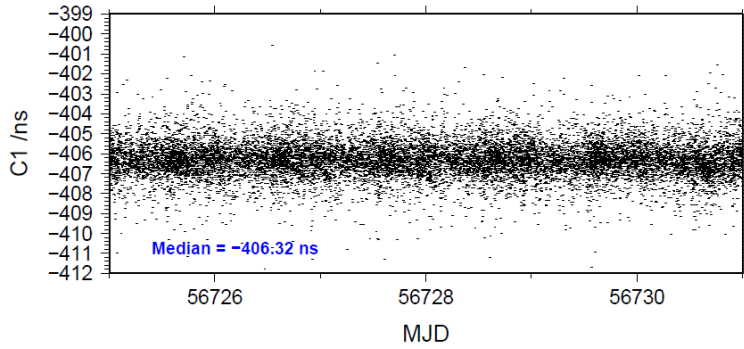
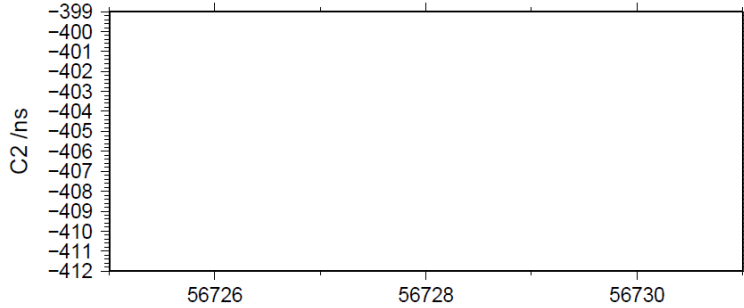
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 155513 -406.298 1.606
 C2: 0-NaN -NaN
 P1: 153000 -403.105 1.893
 P2: 152837 -403.619 2.519

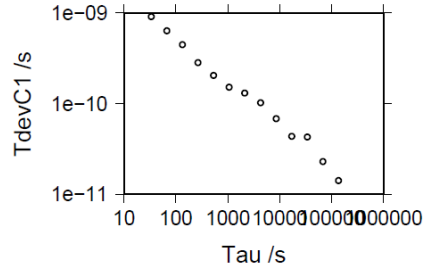
Number of 300s epochs in out file = 1728

Code #pts, median/ns, ave/ns, rms/ns
 C1: 15523 -406.316 -406.300 0.894
 C2: 0 0.000-NaN -NaN
 P1: 15273 -403.115 -403.115 1.066
 P2: 15252 -403.583 -403.626 1.802

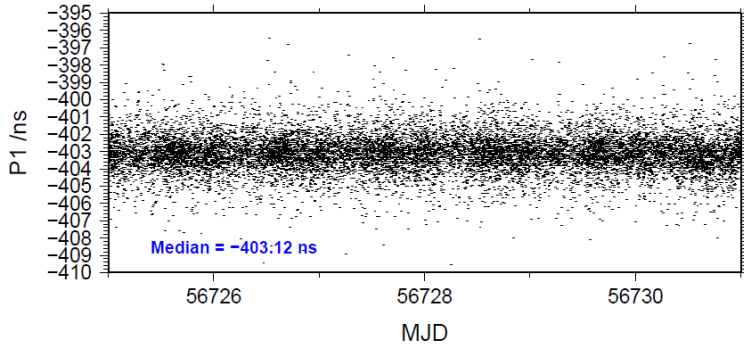
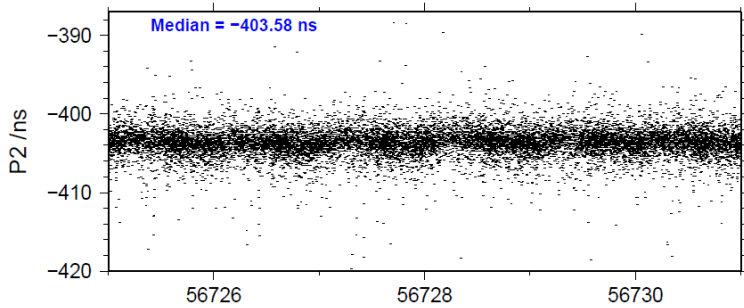
03/20/15 bp1csepa14068_6



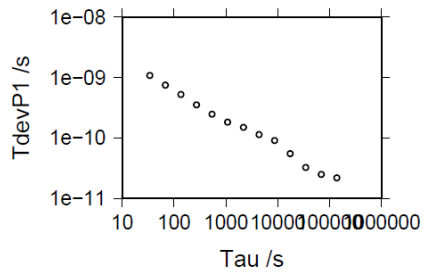
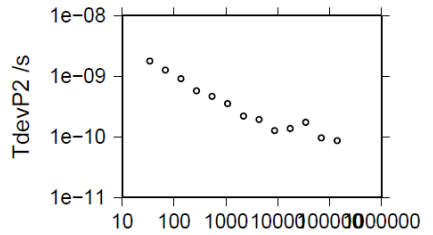
- 136718 s: C1= 14 ps
- 68359 s: C1= 23 ps
- 34180 s: C1= 43 ps
- 17090 s: C1= 44 ps
- 8545 s: C1= 68 ps
- 4272 s: C1= 102 ps
- 2136 s: C1= 131 ps
- 1068 s: C1= 151 ps
- 534 s: C1= 204 ps
- 267 s: C1= 282 ps
- 134 s: C1= 448 ps
- 67 s: C1= 633 ps
- 33 s: C1= 905 ps



03/20/15 bp1csepa14068_6



- | | |
|---------------------|---------------------|
| 138956 s: P1= 22 ps | 139147 s: P2= 87 ps |
| 69478 s: P1= 25 ps | 69574 s: P2= 96 ps |
| 34739 s: P1= 33 ps | 34787 s: P2= 173 ps |
| 17370 s: P1= 55 ps | 17393 s: P2= 137 ps |
| 8685 s: P1= 91 ps | 8697 s: P2= 127 ps |
| 4342 s: P1= 114 ps | 4348 s: P2= 193 ps |
| 2171 s: P1= 150 ps | 2174 s: P2= 219 ps |
| 1086 s: P1= 183 ps | 1087 s: P2= 355 ps |
| 543 s: P1= 246 ps | 544 s: P2= 468 ps |
| 271 s: P1= 356 ps | 272 s: P2= 574 ps |
| 136 s: P1= 524 ps | 136 s: P2= 911 ps |
| 68 s: P1= 753 ps | 68 s: P2= 1266 ps |
| 34 s: P1= 1080 ps | 34 s: P2= 1786 ps |



BP1C-NC02

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 154138
 Computed code bias (P1/P2)/m = -124.999 -125.546
 Computed baseline (X,Y,Z)/m = -8.451 3.336 -7.792
 RMS of residuals /m = 0.684

Number of phase differences to fit baseline = 152807
 A priori baseline (X,Y,Z)/m = -8.451 3.336 -7.792
 17270 clock jitters computed out of 17270 intervals
 AVE jitter /ps = -0.4 RMS jitter /ps = 4.8

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 1
 Computed baseline L1 (X,Y,Z)/m = 0.124 0.006 0.019
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.133 0.002 0.014
 RMS of residuals L2 /m = 0.005

Iter 2 Large residuals L1= 0
 Iter 2 Large residuals L2= 1
 Computed baseline L1 (X,Y,Z)/m = 0.124 0.006 0.019
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.133 0.002 0.014
 RMS of residuals L2 /m = 0.005

Final baseline L1 (X,Y,Z)/m = -8.327 3.341 -7.772
 Final baseline L2 (X,Y,Z)/m = -8.319 3.337 -7.778

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 156266

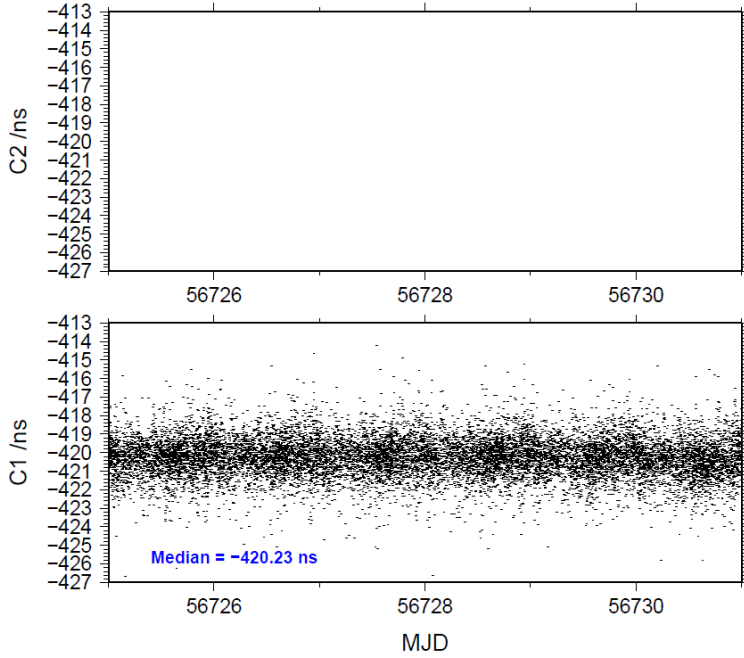
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 156100 -420.239 1.820
 C2: 0-NaN -NaN
 P1: 154061 -416.839 2.323
 P2: 153872 -418.639 2.895

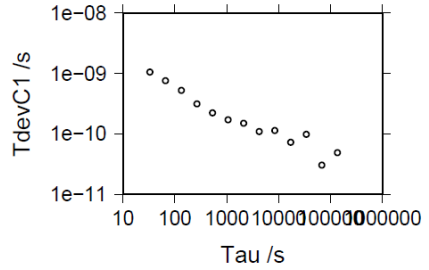
Number of 300s epochs in out file = 1728

Code #pts, median/ns, ave/ns, rms/ns
 C1: 15587 -420.232 -420.248 1.051
 C2: 0 0.000-NaN -NaN
 P1: 15384 -416.859 -416.854 1.321
 P2: 15362 -418.633 -418.651 1.960

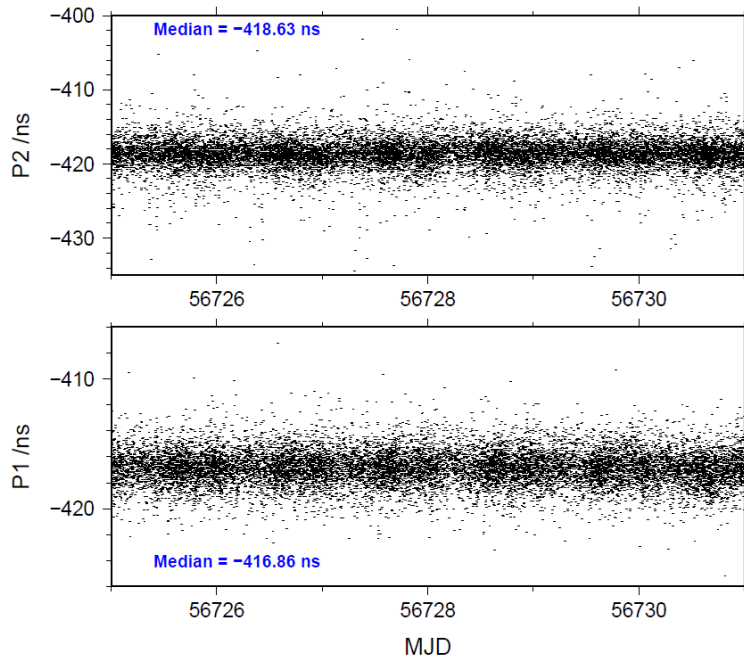
03/20/15 bp1cnc0214068_6



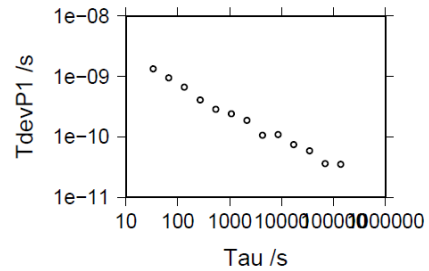
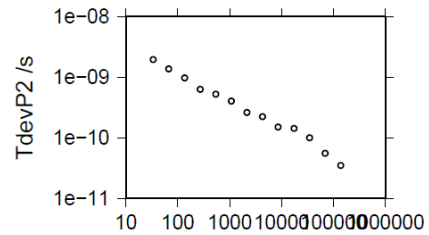
- 136157 s: C1= 49 ps
- 68078 s: C1= 31 ps
- 34039 s: C1= 99 ps
- 17020 s: C1= 73 ps
- 8510 s: C1= 115 ps
- 4255 s: C1= 110 ps
- 2127 s: C1= 151 ps
- 1064 s: C1= 172 ps
- 532 s: C1= 224 ps
- 266 s: C1= 316 ps
- 133 s: C1= 527 ps
- 66 s: C1= 754 ps
- 33 s: C1= 1052 ps



03/20/15 bp1cnc0214068_6



- 137953 s: P1= 35 ps 138151 s: P2= 35 ps
- 68977 s: P1= 36 ps 69076 s: P2= 55 ps
- 34488 s: P1= 59 ps 34538 s: P2= 100 ps
- 17244 s: P1= 75 ps 17269 s: P2= 142 ps
- 8622 s: P1= 109 ps 8634 s: P2= 150 ps
- 4311 s: P1= 106 ps 4317 s: P2= 224 ps
- 2156 s: P1= 188 ps 2159 s: P2= 261 ps
- 1078 s: P1= 240 ps 1079 s: P2= 406 ps
- 539 s: P1= 287 ps 540 s: P2= 522 ps
- 269 s: P1= 409 ps 270 s: P2= 633 ps
- 135 s: P1= 661 ps 135 s: P2= 980 ps
- 67 s: P1= 953 ps 67 s: P2= 1376 ps
- 34 s: P1= 1328 ps 34 s: P2= 1948 ps



2.9/ BIPM (14105)Period

MJD 56762 to 56769

Delays

All measurements at BIPM carried out by L. Tisserand.

Equipment used to measure internal delay of local receiver is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 4680, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

Equipment used to measure internal delay of traveling receivers is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 5482, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

BP0R:

$$\begin{aligned} X_O &= 227.5 \text{ ns} && (267.5-48.7+8.7) \\ X_P &= 42.7 \text{ ns} && (BP1R+C139+BP1S+C72) \\ \text{REFDLY} &= 270.2 \text{ ns} \\ \text{CABDLY} = X_C &= 133.4 \text{ ns} && (C113) \end{aligned}$$

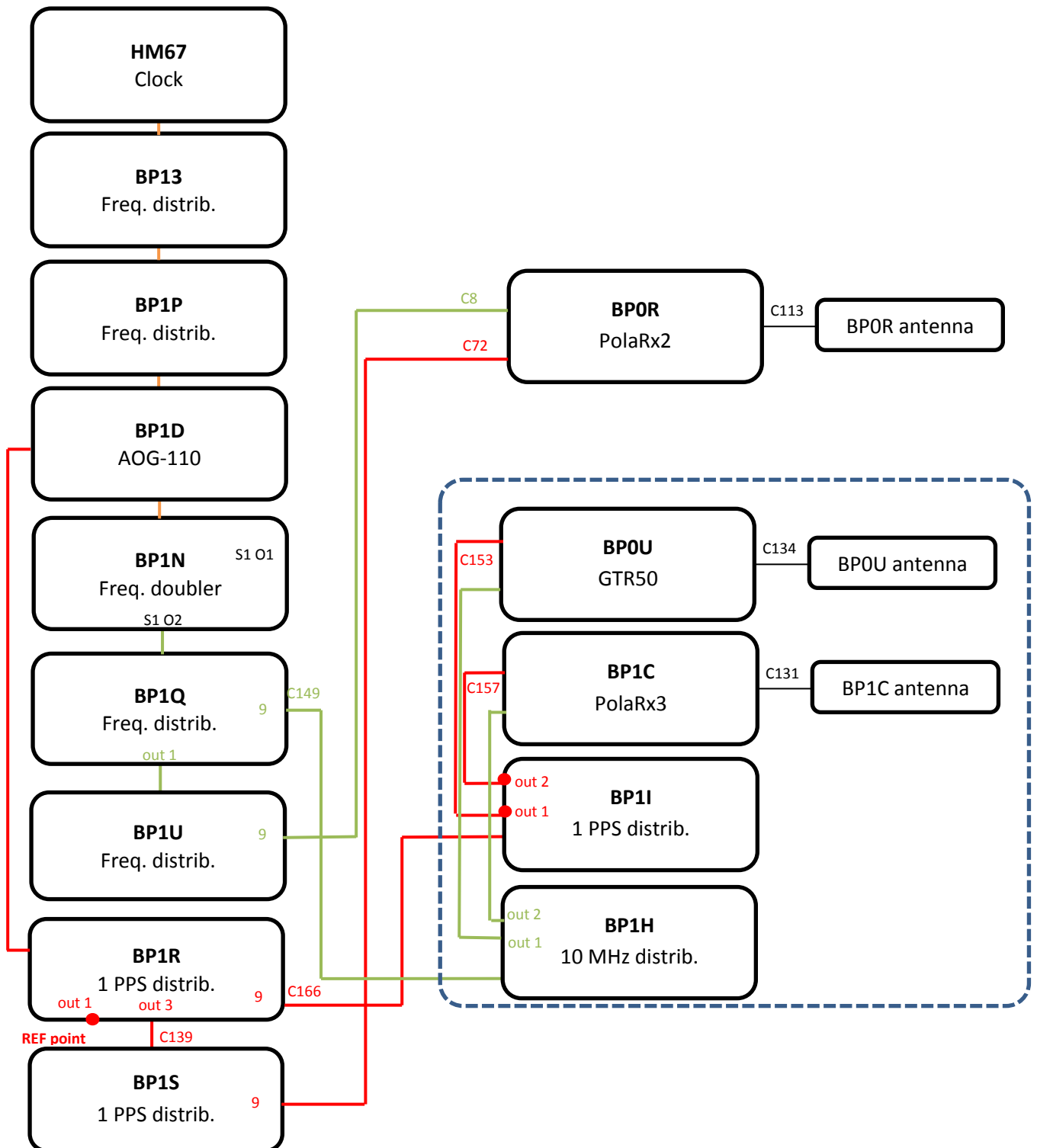
BP0U:

$$\begin{aligned} \text{REFDLY} = X_P &= 52.6 \text{ ns} && (BP1R+C166+BP1I+C153) \\ \text{CABDLY} = X_C &= 182.0 \text{ ns} && (C134) \end{aligned}$$

BP1C:

$$\begin{aligned} X_O &= 204.6 \text{ ns} && (220.0-15.4) \\ X_P &= 52.6 \text{ ns} && (BP1R+C166+BP1I+C157) \\ \text{REFDLY} &= 257.2 \text{ ns} \\ \text{CABDLY} = X_C &= 235.7 \text{ ns} && (C131) \end{aligned}$$

Setup at the BIPM



BP0U-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 92878
 Computed code bias (P1/P2)/m = -27.686 -26.718
 Computed baseline (X,Y,Z)/m = -5.352 -0.801 4.246
 RMS of residuals /m = 0.683

Number of phase differences to fit baseline = 83096
 A priori baseline (X,Y,Z)/m = -5.352 -0.801 4.246
 18894 clock jitters computed out of 19140 intervals
 AVE jitter /ps = -0.5 RMS jitter /ps = 38.5

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.163 0.036 0.223
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.189 0.042 0.249
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -5.189 -0.765 4.469
 Final baseline L2 (X,Y,Z)/m = -5.164 -0.759 4.495

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 93303

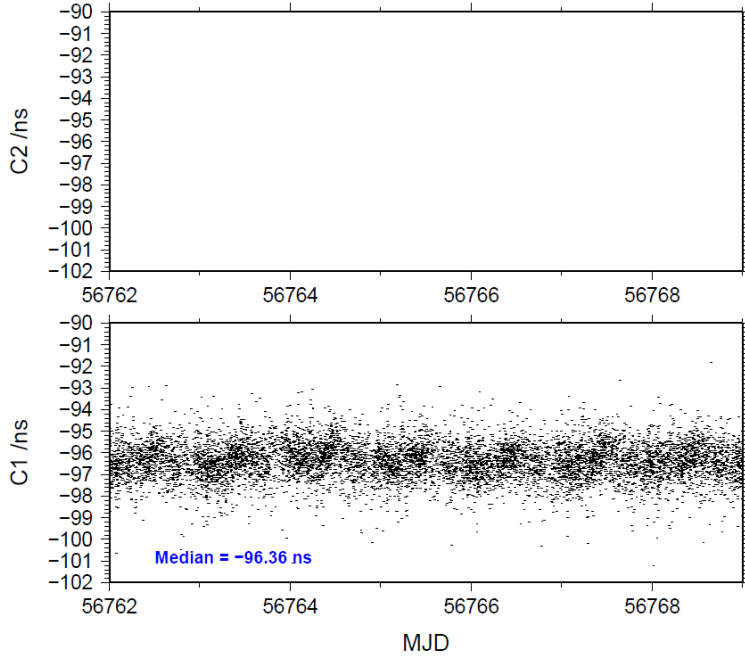
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 93257 -96.370 1.568
 C2: 0-NaN -NaN
 P1: 92820 -93.057 2.419
 P2: 92821 -89.925 2.648

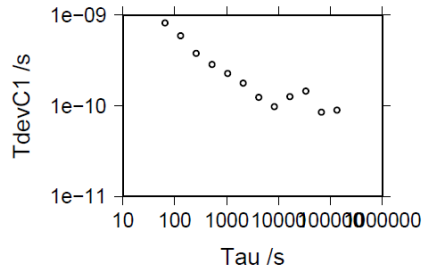
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 9274 -96.363 -96.378 0.842
 C2: 0 0.000-NaN -NaN
 P1: 9244 -93.138 -93.093 1.205
 P2: 9245 -89.932 -89.914 1.452

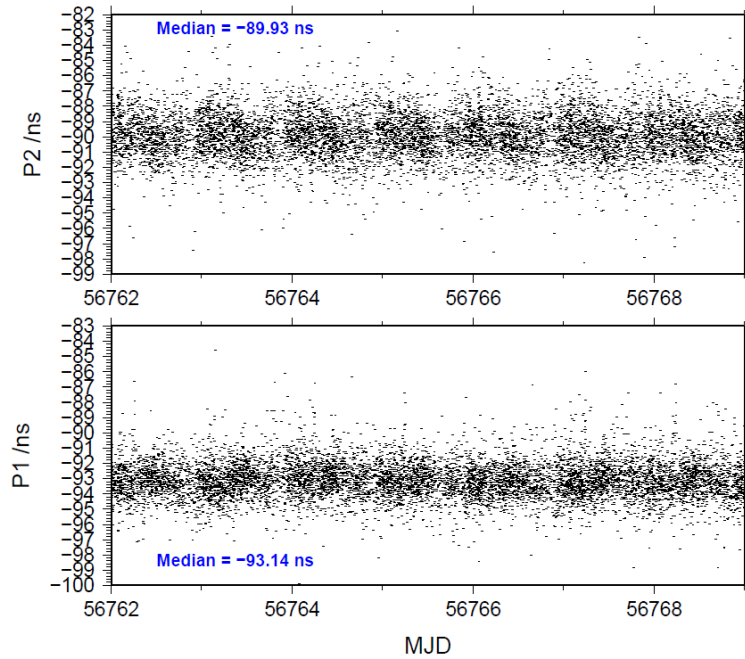
03/20/15 bp0ubp0r14105_7



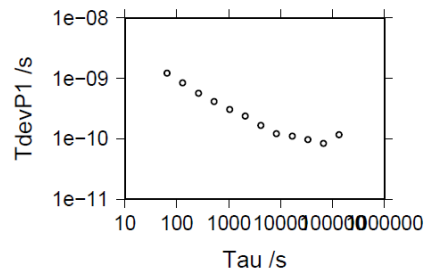
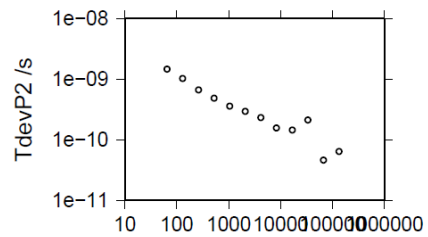
- 133508 s: C1= 89 ps
- 66754 s: C1= 85 ps
- 33377 s: C1= 146 ps
- 16688 s: C1= 126 ps
- 8344 s: C1= 98 ps
- 4172 s: C1= 124 ps
- 2086 s: C1= 177 ps
- 1043 s: C1= 226 ps
- 522 s: C1= 285 ps
- 261 s: C1= 378 ps
- 130 s: C1= 590 ps
- 65 s: C1= 821 ps



03/20/15 bp0ubp0r14105_7



- 133941 s: P1= 117 ps
- 66970 s: P1= 84 ps
- 33485 s: P1= 98 ps
- 16743 s: P1= 111 ps
- 8371 s: P1= 122 ps
- 4186 s: P1= 168 ps
- 2093 s: P1= 239 ps
- 1046 s: P1= 308 ps
- 523 s: P1= 415 ps
- 262 s: P1= 569 ps
- 131 s: P1= 837 ps
- 65 s: P1= 1215 ps
- 133926 s: P2= 64 ps
- 66963 s: P2= 46 ps
- 33482 s: P2= 213 ps
- 16741 s: P2= 145 ps
- 8370 s: P2= 157 ps
- 4185 s: P2= 231 ps
- 2093 s: P2= 294 ps
- 1046 s: P2= 360 ps
- 523 s: P2= 482 ps
- 262 s: P2= 668 ps
- 131 s: P2= 1022 ps
- 65 s: P2= 1461 ps



BP1C-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 123585
 Computed code bias (P1/P2)/m = -16.133 -15.436
 Computed baseline (X,Y,Z)/m = -4.426 -0.723 3.786
 RMS of residuals /m = 0.655

Number of phase differences to fit baseline = 121325
 A priori baseline (X,Y,Z)/m = -4.426 -0.723 3.786
 20150 clock jitters computed out of 20150 intervals
 AVE jitter /ps = 0.2 RMS jitter /ps = 5.7

Iter 1 Large residuals L1= 2
 Iter 1 Large residuals L2= 7
 Computed baseline L1 (X,Y,Z)/m = -0.031 0.013 0.023
 RMS of residuals L1 /m = 0.005
 Computed baseline L2 (X,Y,Z)/m = -0.027 0.017 0.022
 RMS of residuals L2 /m = 0.005

Iter 2 Large residuals L1= 2
 Iter 2 Large residuals L2= 7
 Computed baseline L1 (X,Y,Z)/m = -0.031 0.013 0.023
 RMS of residuals L1 /m = 0.005
 Computed baseline L2 (X,Y,Z)/m = -0.027 0.017 0.022
 RMS of residuals L2 /m = 0.005

Final baseline L1 (X,Y,Z)/m = -4.457 -0.709 3.809
 Final baseline L2 (X,Y,Z)/m = -4.452 -0.706 3.808

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 126687

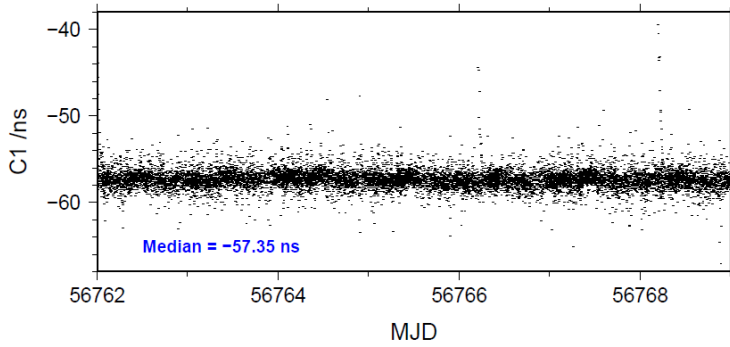
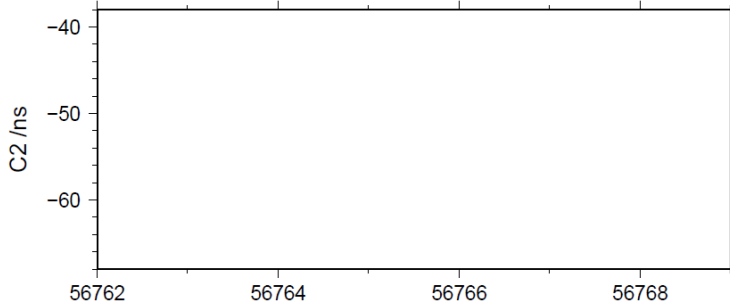
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 126201 -57.317 2.024
 C2: 0-NaN -NaN
 P1: 123524 -53.800 2.445
 P2: 123459 -51.486 2.763

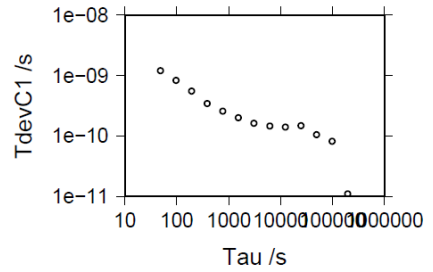
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 12524 -57.354 -57.312 1.180
 C2: 0 0.000-NaN -NaN
 P1: 12307 -53.841 -53.811 1.340
 P2: 12299 -51.496 -51.501 1.556

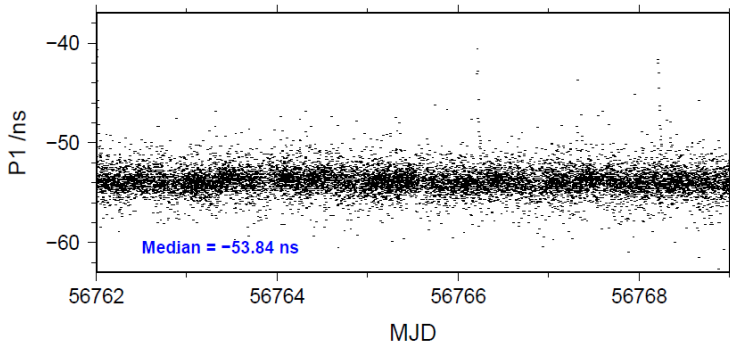
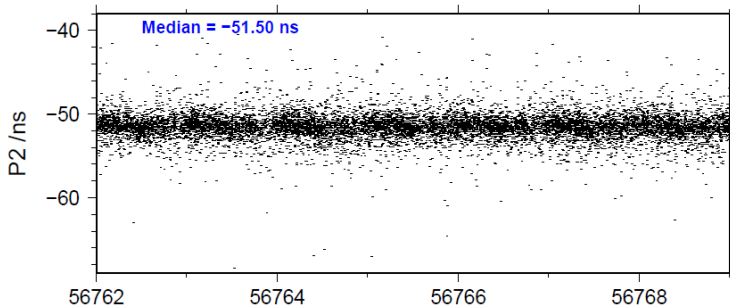
03/20/15 bp1cbp0r14105_7



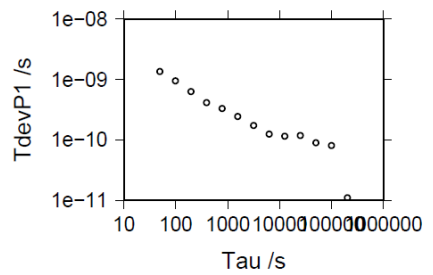
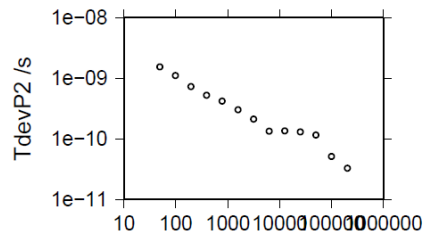
- 197719 s: C1= 11 ps
- 98859 s: C1= 82 ps
- 49430 s: C1= 106 ps
- 24715 s: C1= 148 ps
- 12357 s: C1= 141 ps
- 6179 s: C1= 146 ps
- 3089 s: C1= 163 ps
- 1545 s: C1= 201 ps
- 772 s: C1= 257 ps
- 386 s: C1= 345 ps
- 193 s: C1= 555 ps
- 97 s: C1= 832 ps
- 48 s: C1= 1196 ps



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- 201205 s: P1= 11 ps
- 100603 s: P1= 81 ps
- 50301 s: P1= 90 ps
- 25151 s: P1= 119 ps
- 12575 s: P1= 115 ps
- 6288 s: P1= 125 ps
- 3144 s: P1= 173 ps
- 1572 s: P1= 245 ps
- 786 s: P1= 333 ps
- 393 s: P1= 417 ps
- 196 s: P1= 635 ps
- 98 s: P1= 944 ps
- 49 s: P1= 1362 ps
- 201336 s: P2= 33 ps
- 100668 s: P2= 51 ps
- 50334 s: P2= 115 ps
- 25167 s: P2= 131 ps
- 12584 s: P2= 135 ps
- 6292 s: P2= 134 ps
- 3146 s: P2= 212 ps
- 1573 s: P2= 302 ps
- 786 s: P2= 418 ps
- 393 s: P2= 527 ps
- 197 s: P2= 726 ps
- 98 s: P2= 1113 ps
- 49 s: P2= 1546 ps



2.10/ NIM (14162)Period

MJD 56819 to 56826

Delays

BP0U:

$$\text{REFDLY} = X_P = 111 + 52.6 = 163.6 \text{ ns} \quad (111 + C166 + BP1I + C153)$$

$$\text{CABDLY} = X_C = 182.0 \text{ ns} \quad (C134)$$

BP1C:

$$X_O = 201.0 \text{ ns}$$

$$X_P = 111 + 52.6 = 163.6 \text{ ns} \quad (111 + C166 + BP1I + C157)$$

$$\text{REFDLY} = 364.6 \text{ ns}$$

$$\text{CABDLY} = X_C = 235.7 \text{ ns} \quad (C131)$$

IMEJ:

$$\text{REFDLY} = 122.2 \text{ ns}$$

$$\text{CABDLY} = 248.7 \text{ ns}$$

IMEU:

$$\text{REFDLY} = 115.5 \text{ ns}$$

$$\text{CABDLY} = 250.3 \text{ ns}$$

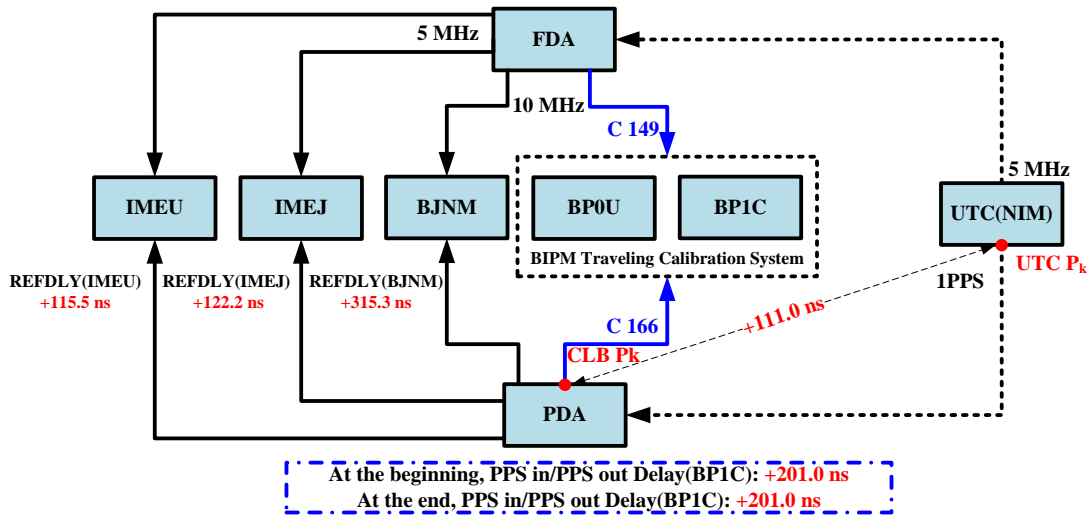
BJNM:

$$\text{REFDLY} = 315.3 \text{ ns}$$

$$\text{CABDLY} = 125.0 \text{ ns}$$

REFDLY values for IMEJ, IMEU, BJNM and BP1C documented in a message 10 July 2014 by K. Liang.

Setup at the NIM



BPOU-IMEU

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 106564
 Computed code bias (P1/P2)/m = -68.160 -70.428
 Computed baseline (X,Y,Z)/m = -4.829 -1.397 -1.497
 RMS of residuals /m = 0.538

Number of phase differences to fit baseline = 100736
 A priori baseline (X,Y,Z)/m = -4.829 -1.397 -1.497
 19996 clock jitters computed out of 20055 intervals
 AVE jitter /ps = -0.1 RMS jitter /ps = 30.2

Iter 1 Large residuals L1= 4
 Iter 1 Large residuals L2= 4
 Computed baseline L1 (X,Y,Z)/m = -0.047 0.103 0.042
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.032 0.077 0.021
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 4
 Iter 2 Large residuals L2= 4
 Computed baseline L1 (X,Y,Z)/m = -0.047 0.103 0.042
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.032 0.077 0.021
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -4.876 -1.294 -1.456
 Final baseline L2 (X,Y,Z)/m = -4.861 -1.320 -1.476

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 106589

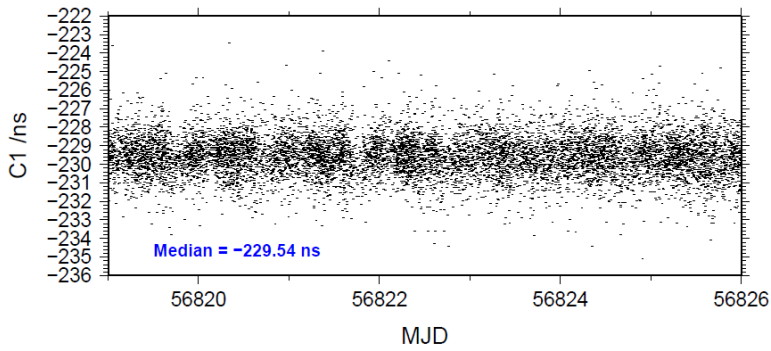
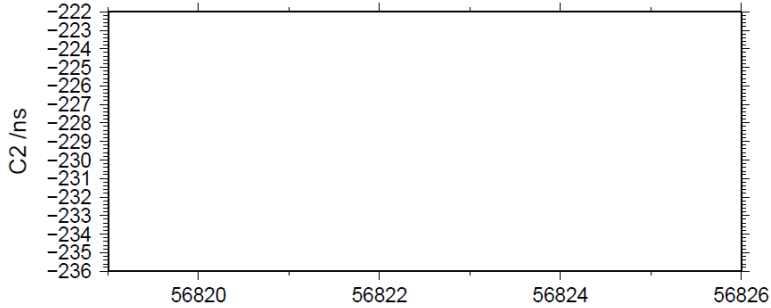
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 106538 -229.510 2.207
 C2: 0-NaN -NaN
 P1: 106513 -227.631 1.759
 P2: 106512 -235.106 2.025

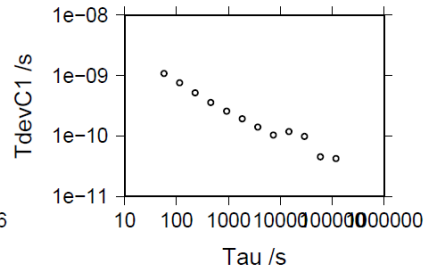
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 10511 -229.538 -229.538 1.072
 C2: 0 0.000-NaN -NaN
 P1: 10509 -227.683 -227.647 0.950
 P2: 10509 -235.094 -235.096 1.194

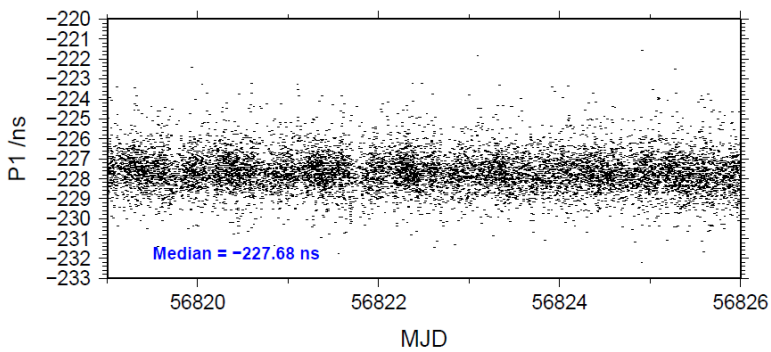
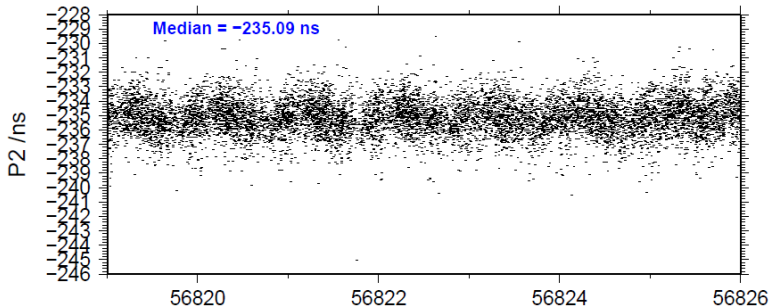
03/20/15 bp0uimeu14162_7



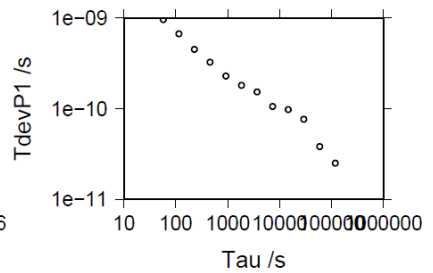
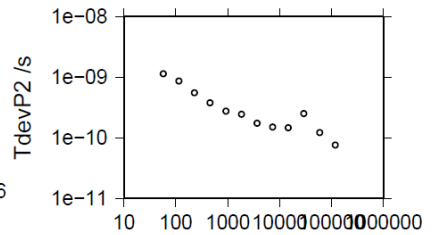
- 117794 s: C1= 42 ps
- 58897 s: C1= 45 ps
- 29449 s: C1= 99 ps
- 14724 s: C1= 118 ps
- 7362 s: C1= 104 ps
- 3681 s: C1= 142 ps
- 1841 s: C1= 194 ps
- 920 s: C1= 258 ps
- 460 s: C1= 358 ps
- 230 s: C1= 520 ps
- 115 s: C1= 754 ps
- 58 s: C1= 1087 ps



03/20/15 bp0uimeu14162_7



- | | |
|---------------------|---------------------|
| 117817 s: P1= 25 ps | 117817 s: P2= 75 ps |
| 58908 s: P1= 38 ps | 58908 s: P2= 122 ps |
| 29454 s: P1= 77 ps | 29454 s: P2= 253 ps |
| 14727 s: P1= 98 ps | 14727 s: P2= 147 ps |
| 7364 s: P1= 106 ps | 7364 s: P2= 151 ps |
| 3682 s: P1= 153 ps | 3682 s: P2= 173 ps |
| 1841 s: P1= 180 ps | 1841 s: P2= 245 ps |
| 920 s: P1= 229 ps | 920 s: P2= 277 ps |
| 460 s: P1= 324 ps | 460 s: P2= 379 ps |
| 230 s: P1= 448 ps | 230 s: P2= 551 ps |
| 115 s: P1= 666 ps | 115 s: P2= 867 ps |
| 58 s: P1= 957 ps | 58 s: P2= 1144 ps |



BPOU-IMEJ

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 106955
 Computed code bias (P1/P2)/m = -36.072 -35.083
 Computed baseline (X,Y,Z)/m = -4.158 -2.205 -0.467
 RMS of residuals /m = 0.509

Number of phase differences to fit baseline = 99433
 A priori baseline (X,Y,Z)/m = -4.158 -2.205 -0.467
 19796 clock jitters computed out of 19917 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 36.1

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = -0.102 0.163 0.118
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.075 0.130 0.097
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -4.260 -2.043 -0.349
 Final baseline L2 (X,Y,Z)/m = -4.233 -2.076 -0.370

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 106986

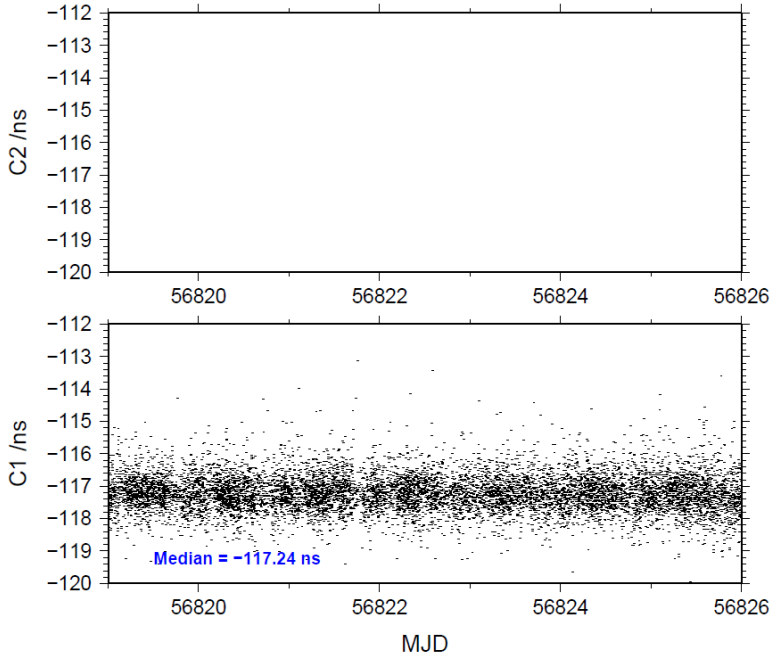
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 106935 -117.200 1.112
 C2: 0-NaN -NaN
 P1: 106904 -120.861 1.636
 P2: 106903 -117.450 1.969

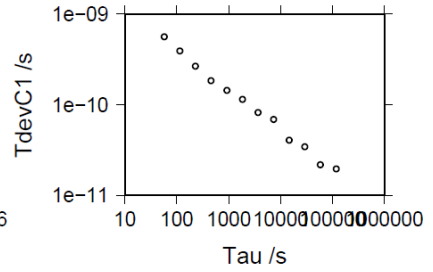
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 10525 -117.238 -117.213 0.557
 C2: 0 0.000-NaN -NaN
 P1: 10523 -120.938 -120.885 0.798
 P2: 10523 -117.473 -117.446 1.021

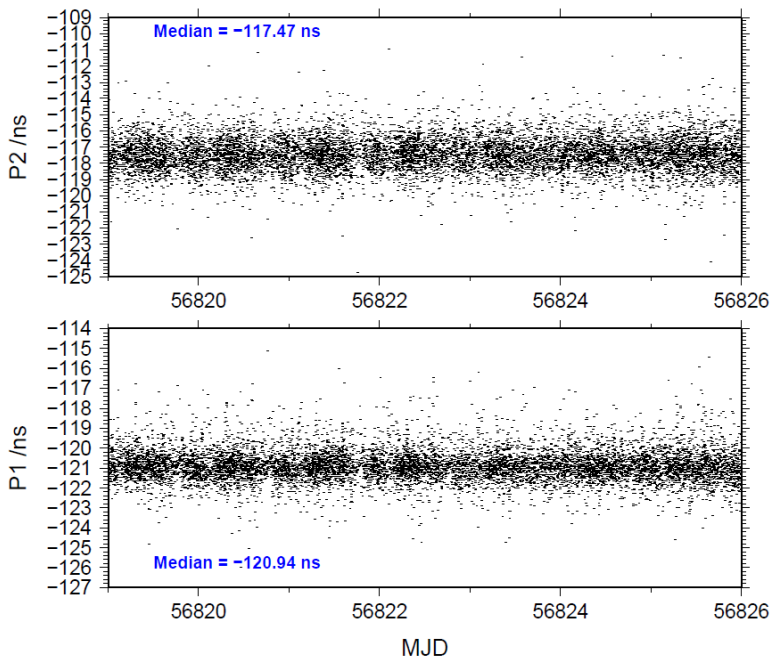
03/20/15 bp0uimej14162_7



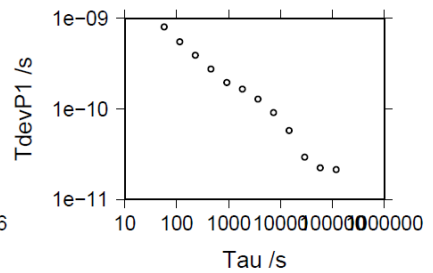
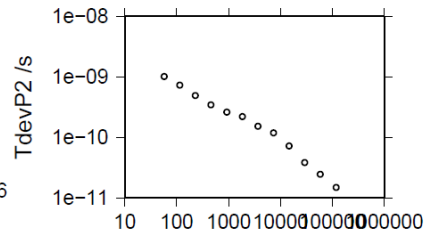
- 117637 s: C1= 20 ps
- 58819 s: C1= 22 ps
- 29409 s: C1= 35 ps
- 14705 s: C1= 41 ps
- 7352 s: C1= 69 ps
- 3676 s: C1= 82 ps
- 1838 s: C1= 114 ps
- 919 s: C1= 145 ps
- 460 s: C1= 184 ps
- 230 s: C1= 265 ps
- 115 s: C1= 390 ps
- 57 s: C1= 560 ps



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- 117660 s: P1= 21 ps 117660 s: P2= 15 ps
- 58830 s: P1= 22 ps 58830 s: P2= 24 ps
- 29415 s: P1= 29 ps 29415 s: P2= 38 ps
- 14707 s: P1= 58 ps 14707 s: P2= 72 ps
- 7354 s: P1= 91 ps 7354 s: P2= 118 ps
- 3677 s: P1= 128 ps 3677 s: P2= 152 ps
- 1838 s: P1= 165 ps 1838 s: P2= 219 ps
- 919 s: P1= 195 ps 919 s: P2= 263 ps
- 460 s: P1= 275 ps 460 s: P2= 343 ps
- 230 s: P1= 391 ps 230 s: P2= 493 ps
- 115 s: P1= 552 ps 115 s: P2= 730 ps
- 57 s: P1= 803 ps 57 s: P2= 1009 ps



BP0U-BJNM

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 106958
 Computed code bias (P1/P2)/m = -0.505 -1.199
 Computed baseline (X,Y,Z)/m = -3.747 -2.708 0.301
 RMS of residuals /m = 0.474

Number of phase differences to fit baseline = 100957
 A priori baseline (X,Y,Z)/m = -3.747 -2.708 0.301
 20004 clock jitters computed out of 20064 intervals
 AVE jitter /ps = -0.1 RMS jitter /ps = 29.9

Iter 1 Large residuals L1= 5
 Iter 1 Large residuals L2= 5
 Computed baseline L1 (X,Y,Z)/m = -0.087 0.158 0.111
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.064 0.128 0.089
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 5
 Iter 2 Large residuals L2= 5
 Computed baseline L1 (X,Y,Z)/m = -0.087 0.158 0.111
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.064 0.128 0.089
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -3.834 -2.550 0.412
 Final baseline L2 (X,Y,Z)/m = -3.811 -2.580 0.391

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 106987

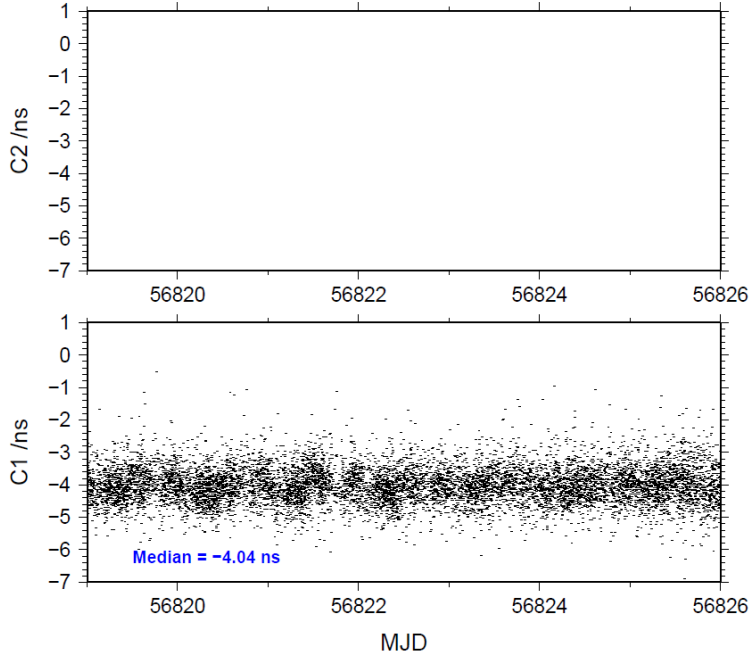
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 106936 -3.997 1.092
 C2: 0-NaN -NaN
 P1: 106907 -2.191 1.436
 P2: 106906 -4.402 1.845

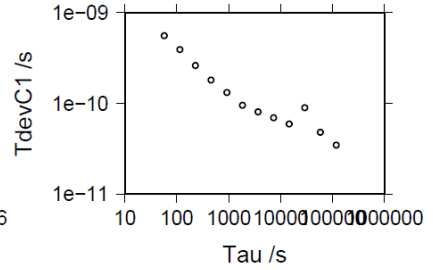
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 10525 -4.036 -4.014 0.554
 C2: 0 0.000-NaN -NaN
 P1: 10523 -2.249 -2.217 0.703
 P2: 10523 -4.405 -4.396 0.972

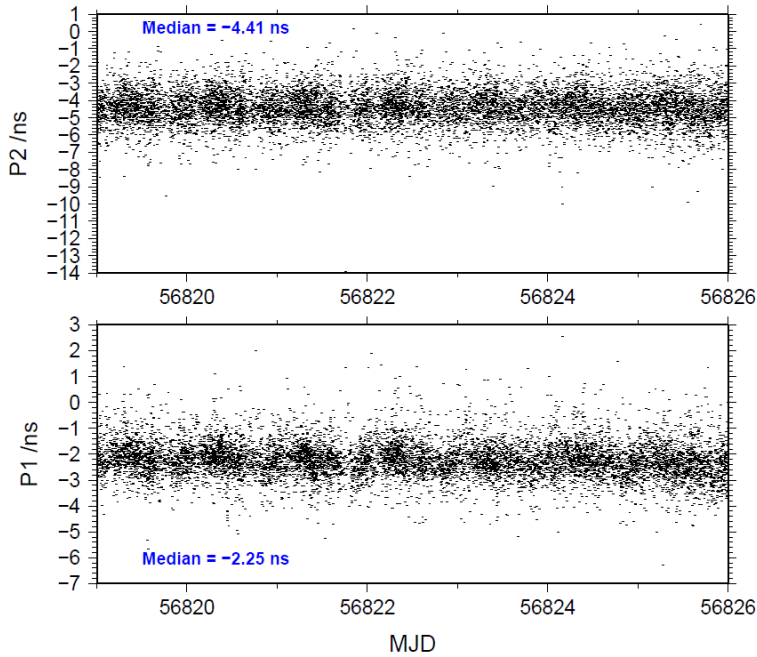
03/20/15 bp0ubjnm14162_7



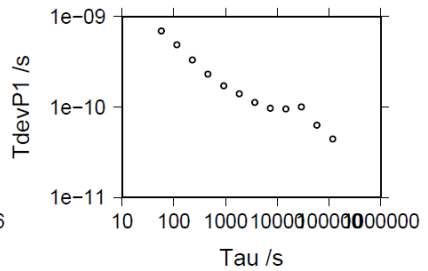
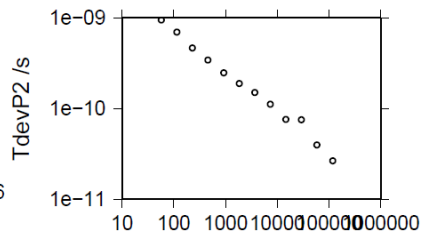
- 117637 s: C1= 35 ps
- 58819 s: C1= 48 ps
- 29409 s: C1= 90 ps
- 14705 s: C1= 59 ps
- 7352 s: C1= 69 ps
- 3676 s: C1= 80 ps
- 1838 s: C1= 95 ps
- 919 s: C1= 131 ps
- 460 s: C1= 180 ps
- 230 s: C1= 261 ps
- 115 s: C1= 390 ps
- 57 s: C1= 556 ps



03/20/15 bp0ubjnm14162_7



- 117660 s: P1= 44 ps 117660 s: P2= 26 ps
- 58830 s: P1= 63 ps 58830 s: P2= 40 ps
- 29415 s: P1= 101 ps 29415 s: P2= 75 ps
- 14707 s: P1= 95 ps 14707 s: P2= 76 ps
- 7354 s: P1= 97 ps 7354 s: P2= 112 ps
- 3677 s: P1= 112 ps 3677 s: P2= 150 ps
- 1838 s: P1= 140 ps 1838 s: P2= 189 ps
- 919 s: P1= 172 ps 919 s: P2= 248 ps
- 460 s: P1= 230 ps 460 s: P2= 343 ps
- 230 s: P1= 330 ps 230 s: P2= 468 ps
- 115 s: P1= 487 ps 115 s: P2= 696 ps
- 57 s: P1= 689 ps 57 s: P2= 952 ps



BP1C-IMEU

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 137415
 Computed code bias (P1/P2)/m = -55.591 -58.237
 Computed baseline (X,Y,Z)/m = -5.305 -1.424 -1.391
 RMS of residuals /m = 0.478

Number of phase differences to fit baseline = 136801
 A priori baseline (X,Y,Z)/m = -5.305 -1.424 -1.391
 20148 clock jitters computed out of 20148 intervals
 AVE jitter /ps = -0.3 RMS jitter /ps = 5.7

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.064 -0.056 -0.085
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.071 -0.072 -0.101
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -5.241 -1.480 -1.476
 Final baseline L2 (X,Y,Z)/m = -5.234 -1.496 -1.492

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 137587

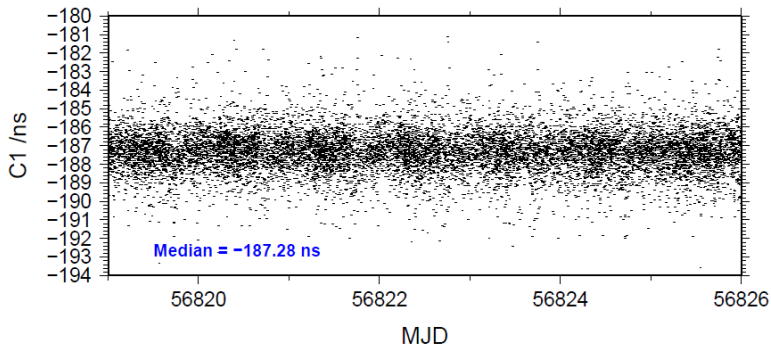
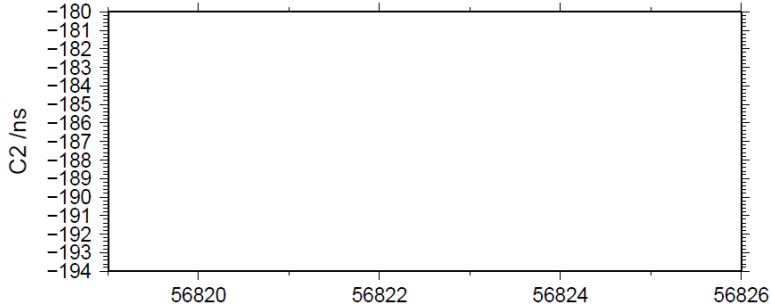
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 137525 -187.273 2.343
 C2: 0-NaN -NaN
 P1: 137354 -185.183 1.575
 P2: 137350 -193.957 1.736

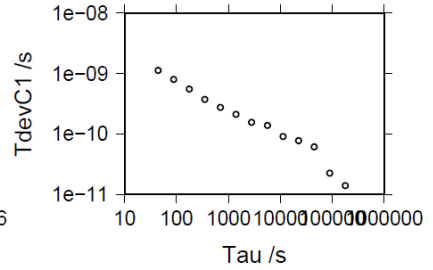
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 13731 -187.277 -187.300 1.123
 C2: 0 0.000-NaN -NaN
 P1: 13715 -185.179 -185.197 0.890
 P2: 13714 -193.961 -193.969 1.076

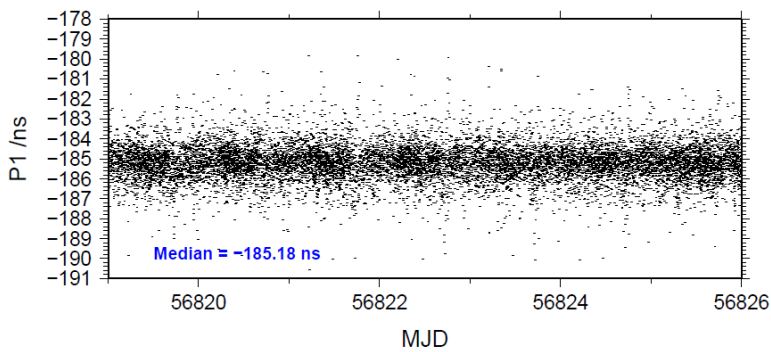
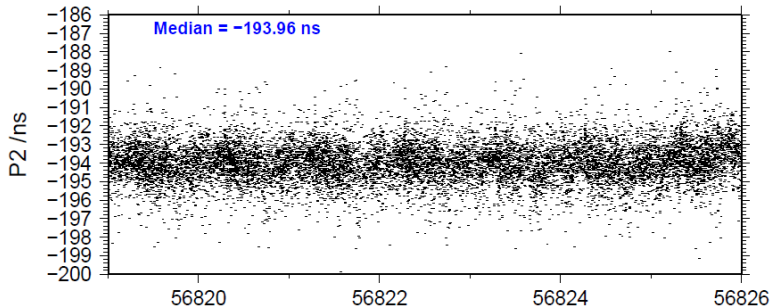
03/20/15 bp1cimeu14162_7



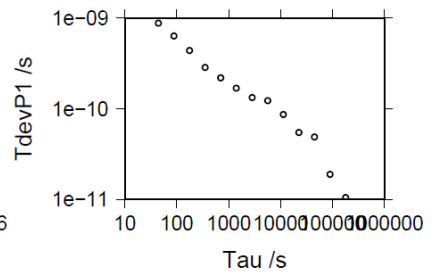
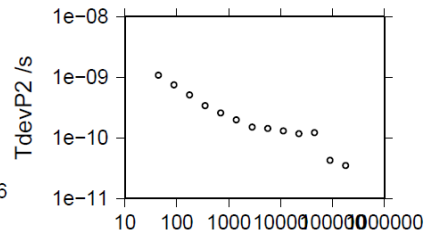
- 180337 s: C1= 14 ps
- 90169 s: C1= 22 ps
- 45084 s: C1= 61 ps
- 22542 s: C1= 78 ps
- 11271 s: C1= 91 ps
- 5636 s: C1= 139 ps
- 2818 s: C1= 157 ps
- 1409 s: C1= 211 ps
- 704 s: C1= 277 ps
- 352 s: C1= 372 ps
- 176 s: C1= 554 ps
- 88 s: C1= 794 ps
- 44 s: C1= 1120 ps



03/20/15 bp1cimeu14162_7



- 180548 s: P1= 11 ps
- 90274 s: P1= 19 ps
- 45137 s: P1= 49 ps
- 22568 s: P1= 55 ps
- 11284 s: P1= 87 ps
- 5642 s: P1= 122 ps
- 2821 s: P1= 133 ps
- 1411 s: P1= 169 ps
- 705 s: P1= 219 ps
- 353 s: P1= 285 ps
- 176 s: P1= 440 ps
- 88 s: P1= 636 ps
- 44 s: P1= 879 ps
- 180561 s: P2= 35 ps
- 90280 s: P2= 43 ps
- 45140 s: P2= 121 ps
- 22570 s: P2= 117 ps
- 11285 s: P2= 130 ps
- 5643 s: P2= 142 ps
- 2821 s: P2= 150 ps
- 1411 s: P2= 198 ps
- 705 s: P2= 257 ps
- 353 s: P2= 338 ps
- 176 s: P2= 509 ps
- 88 s: P2= 745 ps
- 44 s: P2= 1082 ps



BP1C-IMEJ

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 147529
 Computed code bias (P1/P2)/m = -23.550 -22.919
 Computed baseline (X,Y,Z)/m = -4.669 -2.207 -0.334
 RMS of residuals /m = 0.503

Number of phase differences to fit baseline = 145448
 A priori baseline (X,Y,Z)/m = -4.669 -2.207 -0.334
 20103 clock jitters computed out of 20114 intervals
 AVE jitter /ps = -0.2 RMS jitter /ps = 29.7

Iter 1 Large residuals L1= 8
 Iter 1 Large residuals L2= 8
 Computed baseline L1 (X,Y,Z)/m = 0.041 -0.033 -0.041
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.047 -0.055 -0.058
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 8
 Iter 2 Large residuals L2= 8
 Computed baseline L1 (X,Y,Z)/m = 0.041 -0.033 -0.041
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.047 -0.055 -0.058
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -4.627 -2.240 -0.375
 Final baseline L2 (X,Y,Z)/m = -4.622 -2.261 -0.391

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 148679

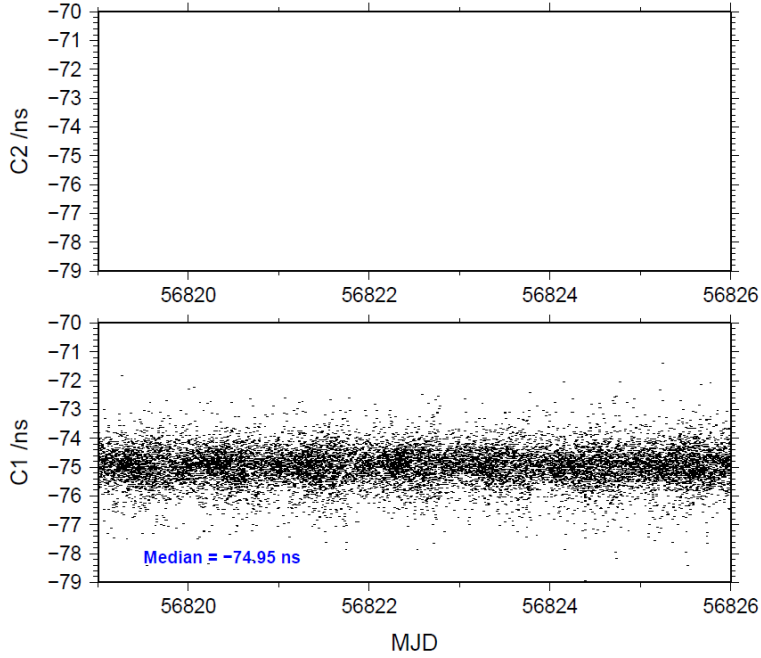
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 148611 -74.957 1.185
 C2: 0-NaN -NaN
 P1: 147461 -78.424 1.627
 P2: 147460 -76.265 1.956

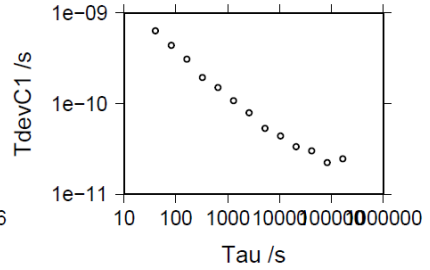
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 14852 -74.950 -74.963 0.618
 C2: 0 0.000-NaN -NaN
 P1: 14744 -78.417 -78.438 0.800
 P2: 14744 -76.278 -76.286 1.012

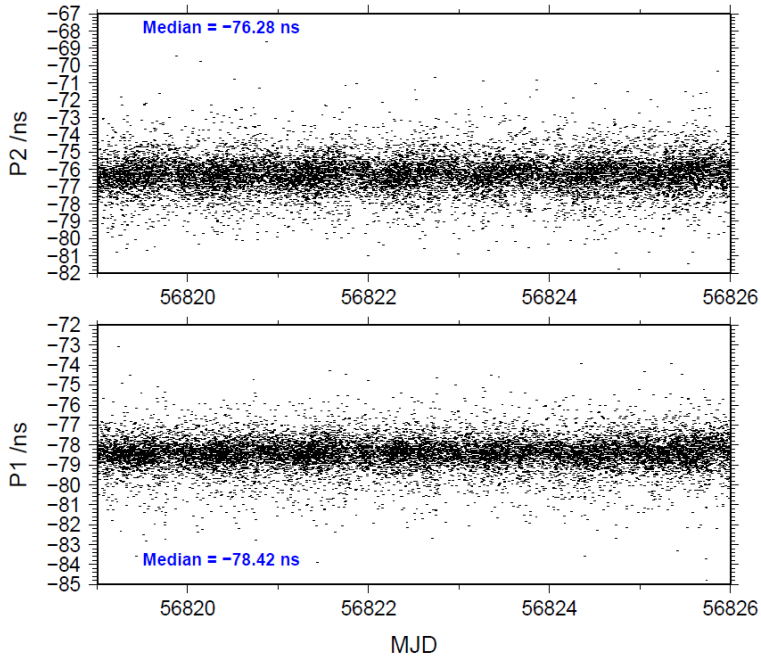
03/20/15 bp1cimej14162_7



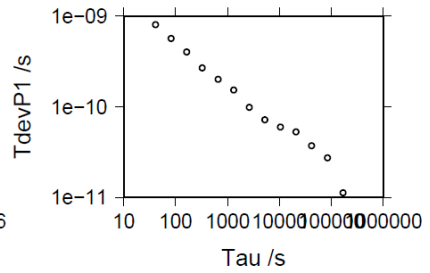
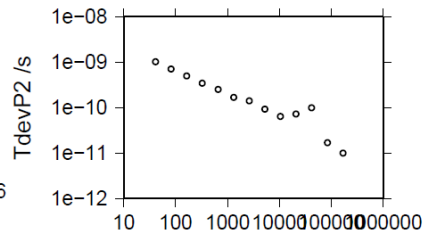
- 166725 s: C1= 25 ps
- 83362 s: C1= 22 ps
- 41681 s: C1= 30 ps
- 20841 s: C1= 34 ps
- 10420 s: C1= 44 ps
- 5210 s: C1= 53 ps
- 2605 s: C1= 79 ps
- 1303 s: C1= 108 ps
- 651 s: C1= 150 ps
- 326 s: C1= 193 ps
- 163 s: C1= 309 ps
- 81 s: C1= 437 ps
- 41 s: C1= 631 ps



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- 167946 s: P1= 11 ps 167946 s: P2= 10 ps
- 83973 s: P1= 28 ps 83973 s: P2= 17 ps
- 41987 s: P1= 37 ps 41987 s: P2= 100 ps
- 20993 s: P1= 53 ps 20993 s: P2= 72 ps
- 10497 s: P1= 60 ps 10497 s: P2= 64 ps
- 5248 s: P1= 72 ps 5248 s: P2= 92 ps
- 2624 s: P1= 99 ps 2624 s: P2= 141 ps
- 1312 s: P1= 153 ps 1312 s: P2= 166 ps
- 656 s: P1= 201 ps 656 s: P2= 253 ps
- 328 s: P1= 267 ps 328 s: P2= 346 ps
- 164 s: P1= 400 ps 164 s: P2= 501 ps
- 82 s: P1= 564 ps 82 s: P2= 708 ps
- 41 s: P1= 800 ps 41 s: P2= 1019 ps



BP1C-BJNM

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 168487
 Computed code bias (P1/P2)/m = 12.011 10.968
 Computed baseline (X,Y,Z)/m = -4.249 -2.717 0.451
 RMS of residuals /m = 0.443

Number of phase differences to fit baseline = 167563
 A priori baseline (X,Y,Z)/m = -4.249 -2.717 0.451
 20154 clock jitters computed out of 20154 intervals
 AVE jitter /ps = -0.2 RMS jitter /ps = 4.7

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.057 -0.027 -0.064
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.063 -0.044 -0.078
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -4.192 -2.744 0.387
 Final baseline L2 (X,Y,Z)/m = -4.186 -2.761 0.373

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 168867

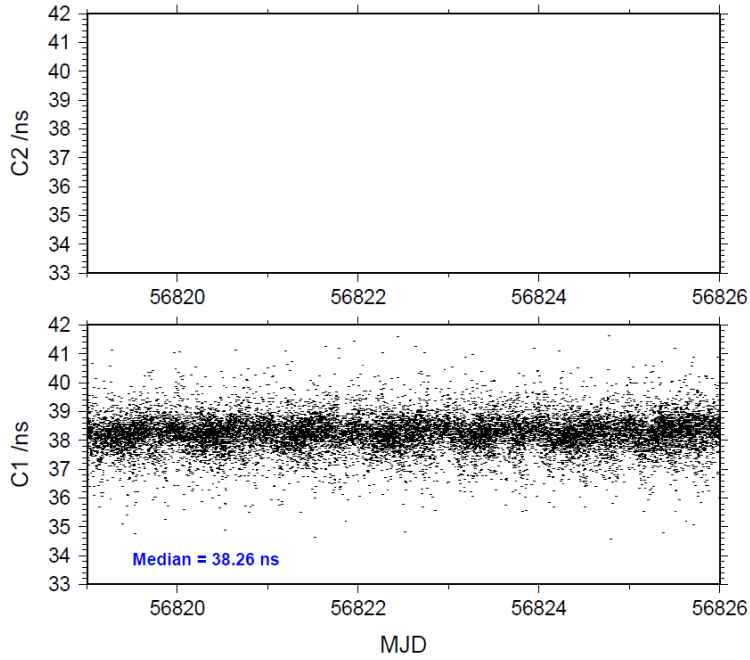
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 168795 38.239 1.267
 C2: 0-NaN -NaN
 P1: 168416 40.214 1.330
 P2: 168373 36.777 1.772

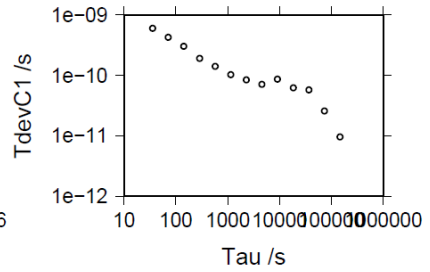
Number of 300s epochs in out file = 2016

Code #pts, median/ns, ave/ns, rms/ns
 C1: 16864 38.260 38.236 0.604
 C2: 0 0.000-NaN -NaN
 P1: 16821 40.254 40.213 0.689
 P2: 16814 36.792 36.777 1.135

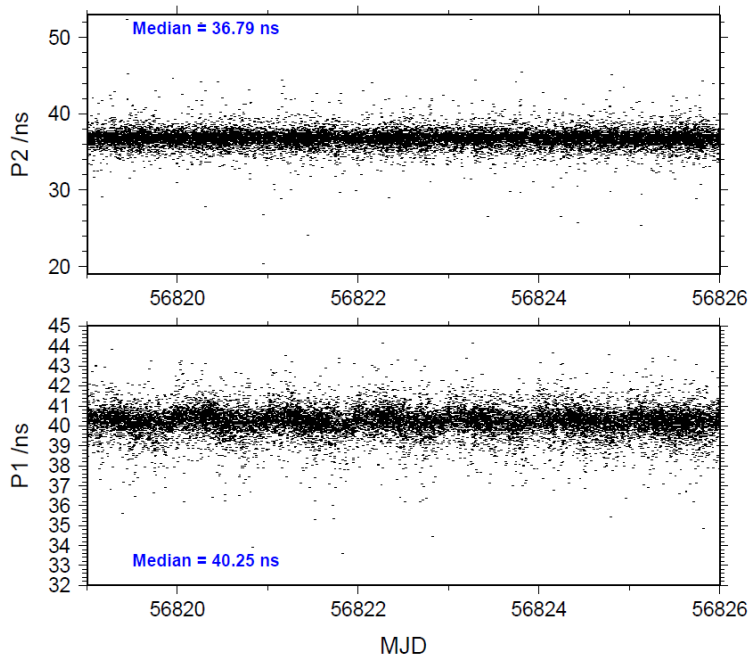
03/20/15 bp1cbjnm14162_7



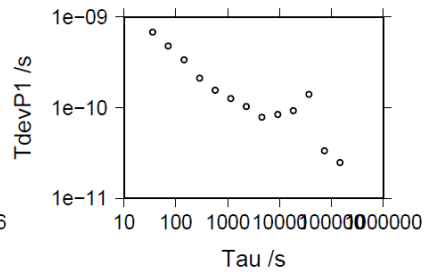
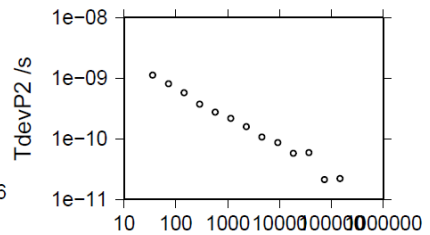
- 146832 s: C1= 10 ps
- 73416 s: C1= 26 ps
- 36708 s: C1= 57 ps
- 18354 s: C1= 62 ps
- 9177 s: C1= 87 ps
- 4589 s: C1= 71 ps
- 2294 s: C1= 84 ps
- 1147 s: C1= 103 ps
- 574 s: C1= 140 ps
- 287 s: C1= 190 ps
- 143 s: C1= 303 ps
- 72 s: C1= 425 ps
- 36 s: C1= 599 ps



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- 147208 s: P1= 25 ps
- 73604 s: P1= 33 ps
- 36802 s: P1= 140 ps
- 18401 s: P1= 93 ps
- 9200 s: P1= 84 ps
- 4600 s: P1= 79 ps
- 2300 s: P1= 103 ps
- 1150 s: P1= 126 ps
- 575 s: P1= 156 ps
- 288 s: P1= 211 ps
- 144 s: P1= 337 ps
- 72 s: P1= 479 ps
- 36 s: P1= 680 ps
- 147269 s: P2= 22 ps
- 73634 s: P2= 21 ps
- 36817 s: P2= 59 ps
- 18409 s: P2= 57 ps
- 9204 s: P2= 86 ps
- 4602 s: P2= 107 ps
- 2301 s: P2= 159 ps
- 1151 s: P2= 217 ps
- 575 s: P2= 277 ps
- 288 s: P2= 371 ps
- 144 s: P2= 576 ps
- 72 s: P2= 812 ps
- 36 s: P2= 1124 ps



2.11/ BIPM (14206)Period

MJD 56863 to 56866

Delays

All measurements at BIPM carried out by L. Tisserand.

Equipment used to measure internal delay of local receiver is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 4680, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

Equipment used to measure internal delay of traveling receivers is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 5482, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

BP0R:

$$\begin{aligned} X_O &= 227.8 \text{ ns} && (267.8-48.7+8.7) \\ X_P &= 42.7 \text{ ns} && (BP1R+C139+BP1S+C72) \\ \text{REFDLY} &= 270.5 \text{ ns} \\ \text{CABDLY} = X_C &= 133.4 \text{ ns} && (C113) \end{aligned}$$

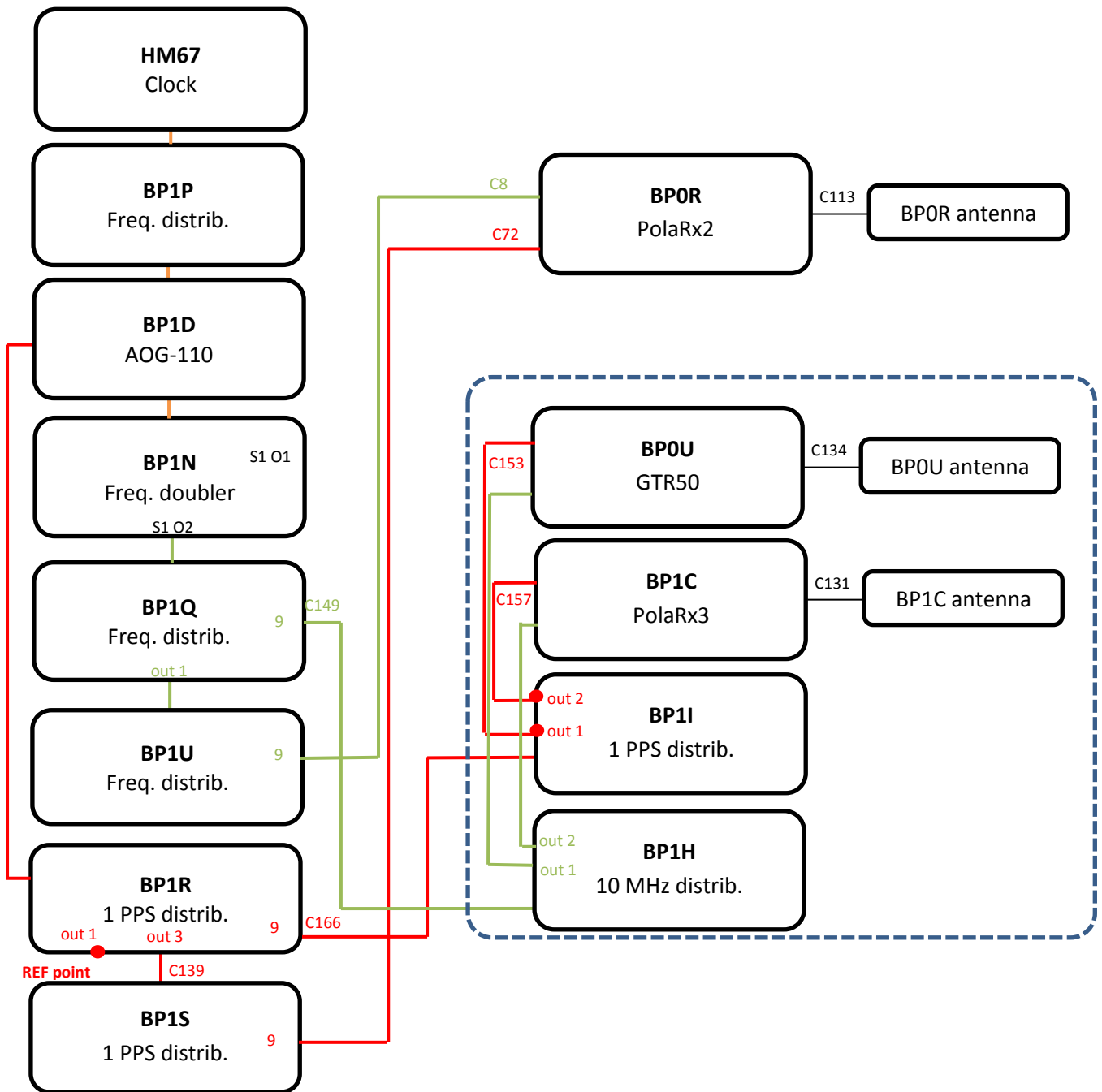
BP0U:

$$\begin{aligned} \text{REFDLY} = X_P &= 52.6 \text{ ns} && (BP1R+C166+BP1I+C153) \\ \text{CABDLY} = X_C &= 182.0 \text{ ns} && (C134) \end{aligned}$$

BP1C:

$$\begin{aligned} X_O &= 205.3 \text{ ns} && (220.6-15.3) \\ X_P &= 52.6 \text{ ns} && (BP1R+C166+BP1I+C157) \\ \text{REFDLY} &= 257.9 \text{ ns} \\ \text{CABDLY} = X_C &= 235.7 \text{ ns} && (C131) \end{aligned}$$

Setup at the BIPM



BP0U-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 31417
 Computed code bias (P1/P2)/m = -27.672 -26.667
 Computed baseline (X,Y,Z)/m = -5.278 -0.779 4.334
 RMS of residuals /m = 0.675

Number of phase differences to fit baseline = 28303
 A priori baseline (X,Y,Z)/m = -5.278 -0.779 4.334
 6395 clock jitters computed out of 6550 intervals
 AVE jitter /ps = -0.4 RMS jitter /ps = 38.3

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.104 0.035 0.153
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.120 0.027 0.167
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -5.175 -0.744 4.487
 Final baseline L2 (X,Y,Z)/m = -5.158 -0.752 4.501

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 31524

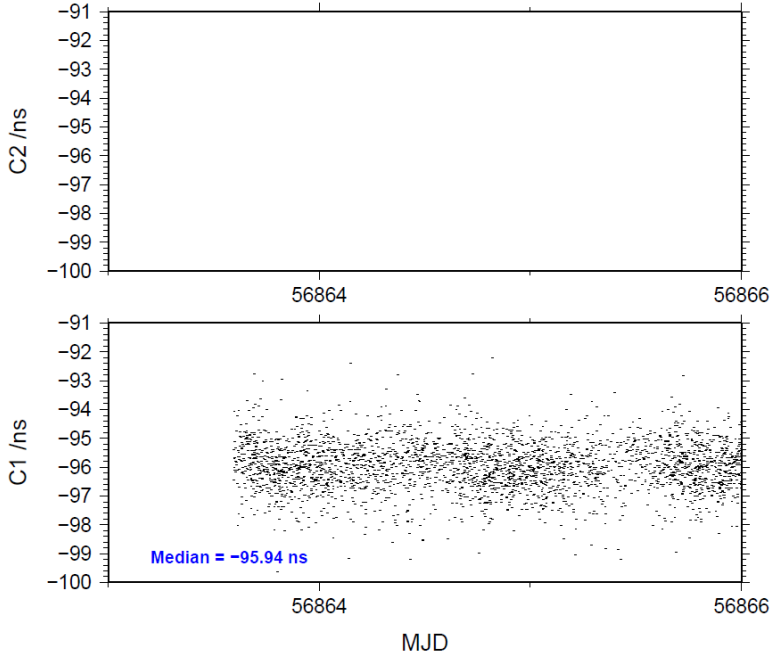
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 31497 -95.957 1.489
 C2: 0-NaN -NaN
 P1: 31388 -92.759 2.381
 P2: 31384 -89.458 2.568

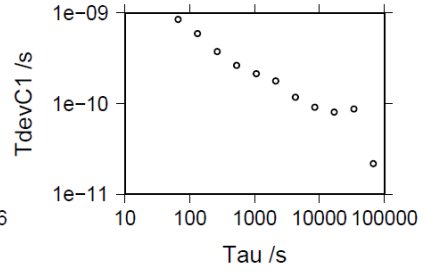
Number of 300s epochs in out file = 694

Code #pts, median/ns, ave/ns, rms/ns
 C1: 3143 -95.943 -95.961 0.833
 C2: 0 0.000-NaN -NaN
 P1: 3131 -92.818 -92.811 1.202
 P2: 3132 -89.390 -89.425 1.474

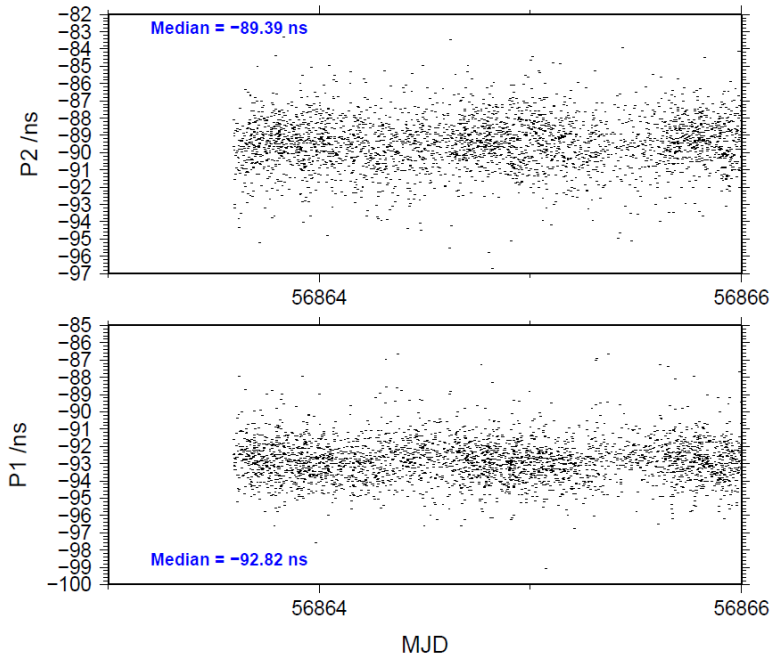
03/20/15 bp0ubp0r14206_3



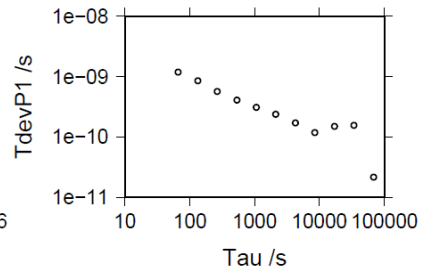
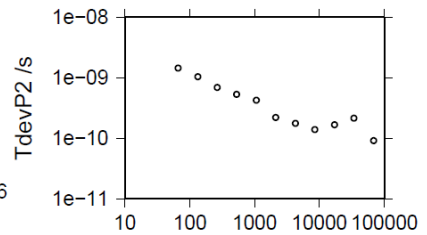
- 67756 s: C1= 22 ps
- 33878 s: C1= 87 ps
- 16939 s: C1= 81 ps
- 8470 s: C1= 91 ps
- 4235 s: C1= 117 ps
- 2117 s: C1= 178 ps
- 1089 s: C1= 214 ps
- 529 s: C1= 263 ps
- 265 s: C1= 375 ps
- 132 s: C1= 591 ps
- 66 s: C1= 843 ps



03/20/15 bp0ubp0r14206_3



- 68016 s: P1= 22 ps
- 34008 s: P1= 157 ps
- 17004 s: P1= 150 ps
- 8502 s: P1= 118 ps
- 4251 s: P1= 172 ps
- 2126 s: P1= 237 ps
- 1063 s: P1= 310 ps
- 531 s: P1= 411 ps
- 266 s: P1= 571 ps
- 133 s: P1= 850 ps
- 66 s: P1= 1189 ps
- 67994 s: P2= 91 ps
- 33997 s: P2= 215 ps
- 16999 s: P2= 166 ps
- 8499 s: P2= 140 ps
- 4250 s: P2= 176 ps
- 2125 s: P2= 222 ps
- 1062 s: P2= 423 ps
- 531 s: P2= 530 ps
- 266 s: P2= 689 ps
- 133 s: P2= 1039 ps
- 66 s: P2= 1454 ps



BP1C-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 43014
 Computed code bias (P1/P2)/m = -16.178 -15.552
 Computed baseline (X,Y,Z)/m = -4.473 -0.764 3.761
 RMS of residuals /m = 0.652

Number of phase differences to fit baseline = 42256
 A priori baseline (X,Y,Z)/m = -4.473 -0.764 3.761
 6953 clock jitters computed out of 6953 intervals
 AVE jitter /ps = 0.4 RMS jitter /ps = 5.4

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 1
 Computed baseline L1 (X,Y,Z)/m = 0.003 0.055 0.055
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.011 0.056 0.039
 RMS of residuals L2 /m = 0.005

Iter 2 Large residuals L1= 0
 Iter 2 Large residuals L2= 1
 Computed baseline L1 (X,Y,Z)/m = 0.003 0.055 0.055
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.011 0.056 0.039
 RMS of residuals L2 /m = 0.005

Final baseline L1 (X,Y,Z)/m = -4.470 -0.709 3.816
 Final baseline L2 (X,Y,Z)/m = -4.483 -0.707 3.800

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 44116

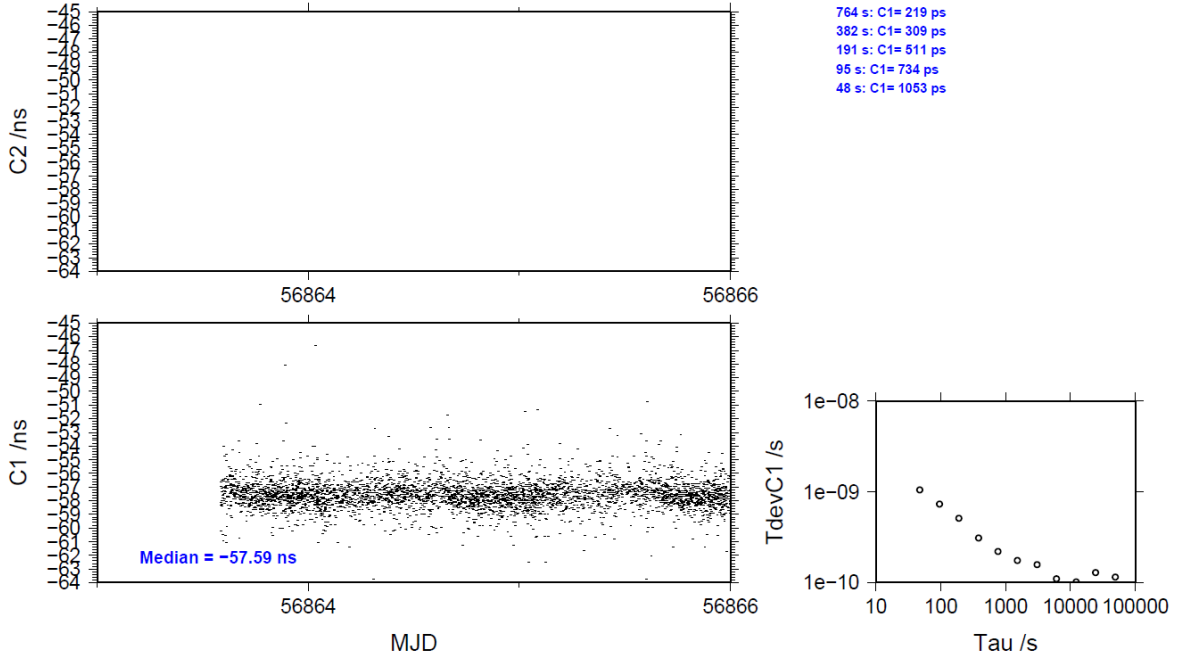
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 43956 -57.551 1.921
 C2: 0-NaN -NaN
 P1: 42969 -54.086 2.423
 P2: 42916 -51.961 2.804

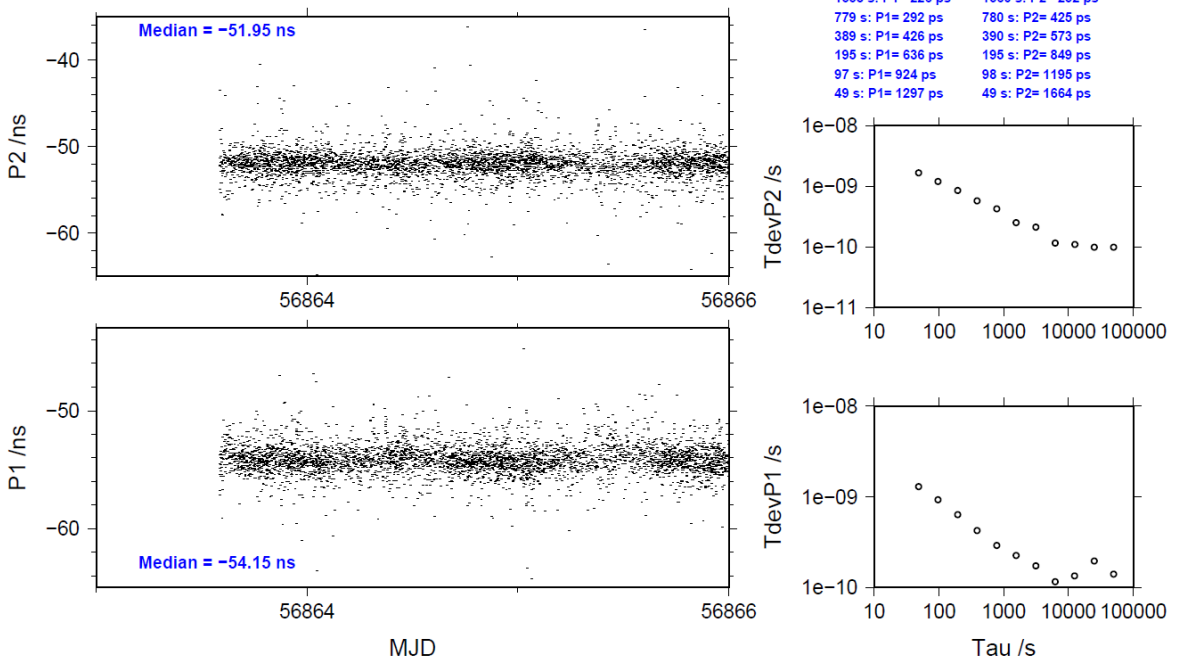
Number of 300s epochs in out file = 696

Code #pts, median/ns, ave/ns, rms/ns
 C1: 4369 -57.592 -57.553 1.037
 C2: 0 0.000-NaN -NaN
 P1: 4284 -54.152 -54.121 1.298
 P2: 4277 -51.949 -51.984 1.673

03/20/15 bp1cbp0r14206_3



03/20/15 bp1cbp0r14206_3



2.12/ PTB (14220)Period

MJD 56877 to 56886

Delays

BP0U:

$$\begin{aligned} \text{REFDLY} = X_P &= 98.17 \text{ ns} && (45.57+C166+BP1I+C153=45.56+52.6) \\ \text{CABDLY} = X_C &= 182.0 \text{ ns} && (C134) \end{aligned}$$

BP1C:

$$\begin{aligned} X_O &= 184.37 \text{ ns} && (199.8-15.43) \\ X_P &= 98.17 \text{ ns} && (45.57+C166+BP1I+C157) \\ \text{REFDLY} &= 282.54 \text{ ns} \\ \text{CABDLY} = X_C &= 235.7 \text{ ns} && (C131) \end{aligned}$$

PTBB:

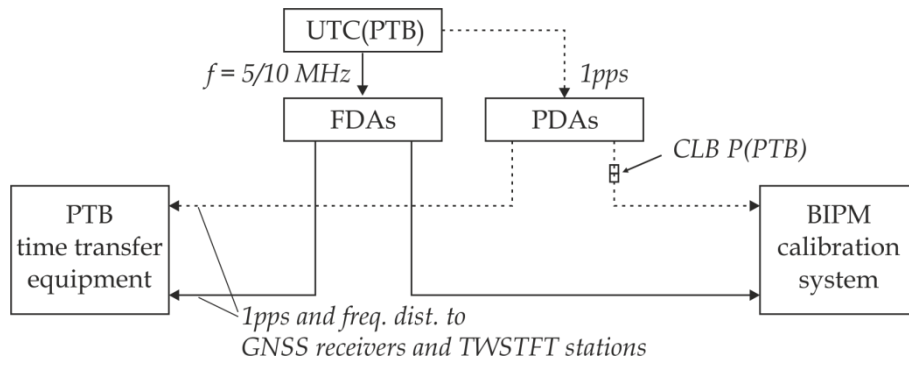
$$\begin{aligned} \text{REFDLY} &= 75.3 \text{ ns} \\ \text{CABDLY} &= 301.7 \text{ ns} \end{aligned}$$

PTBG:

$$\begin{aligned} \text{REFDLY} &= 48.2 \text{ ns} \\ \text{CABDLY} &= 251.4 \text{ ns} \end{aligned}$$

REFDLY value for PTBB documented in a message 26 Aug 2014 by A. Bauch.
 Measurements carried out in October 2010. Set-up unchanged since then.
 REFDLY value for PTBG documented in a message 11 Dec 2014 by A. Bauch
 Measurements carried out in October 2010. Set-up unchanged since then.

Setup at the PTB



BP0U-PTBB

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 135321
 Computed code bias (P1/P2)/m = -175.335 -178.242
 Computed baseline (X,Y,Z)/m = -5.191 2.449 3.506
 RMS of residuals /m = 0.621

Number of phase differences to fit baseline = 126183
 A priori baseline (X,Y,Z)/m = -5.191 2.449 3.506
 24475 clock jitters computed out of 24490 intervals
 AVE jitter /ps = 0.0 RMS jitter /ps = 28.2

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.121 0.015 0.227
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.118 0.019 0.232
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -5.069 2.464 3.733
 Final baseline L2 (X,Y,Z)/m = -5.073 2.468 3.738

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 135327

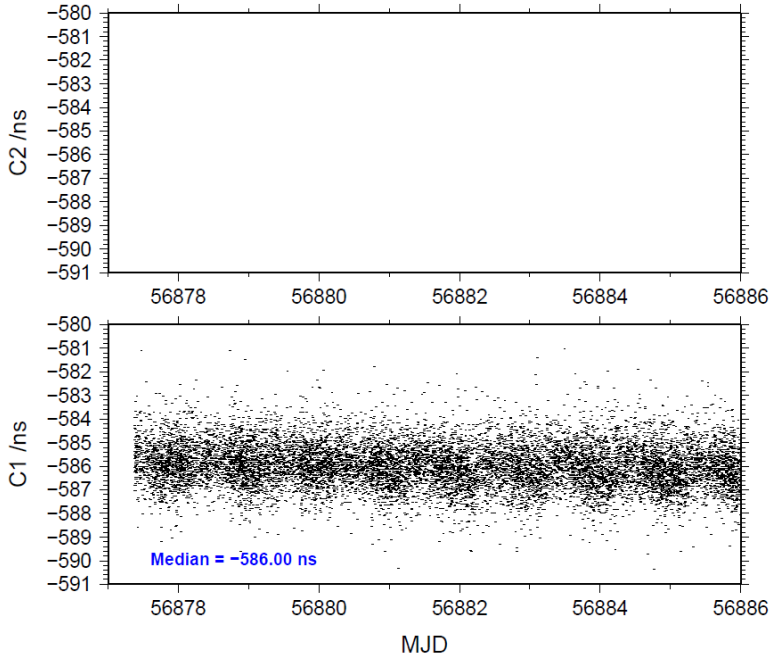
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 135262 -585.955 2.233
 C2: 0 -NaN -NaN
 P1: 135256 -585.445 2.067
 P2: 135257 -595.145 2.347

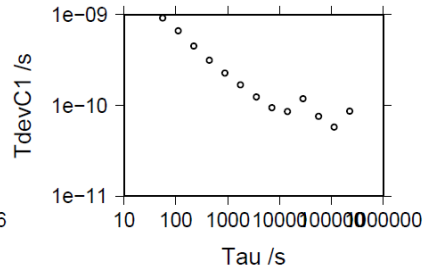
Number of 300s epochs in out file = 2485

Code #pts, median/ns, ave/ns, rms/ns
 C1: 13432 -586.002 -585.972 0.935
 C2: 0 0.000 -NaN -NaN
 P1: 13432 -585.513 -585.463 0.949
 P2: 13432 -595.150 -595.140 1.163

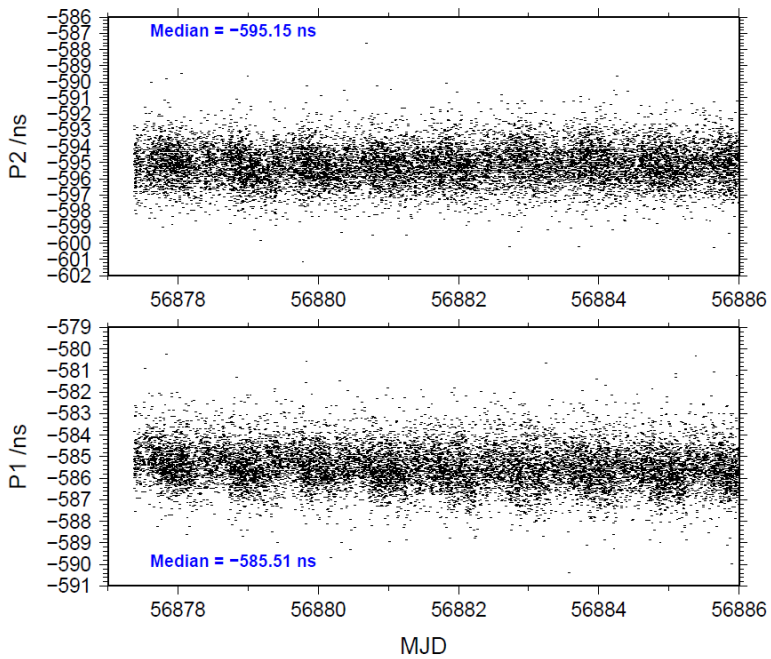
03/20/15 bp0uptbb14220_9



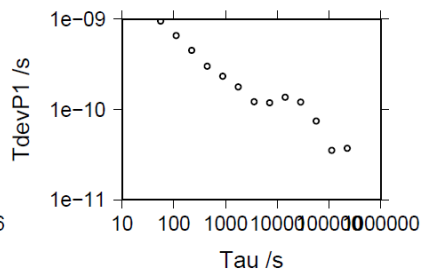
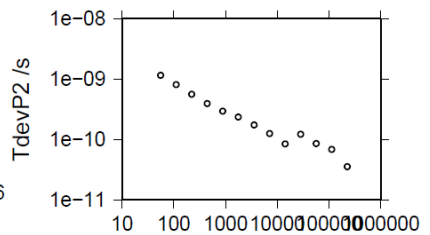
227261 s: C1= 87 ps
 113630 s: C1= 58 ps
 56815 s: C1= 76 ps
 28408 s: C1= 119 ps
 14204 s: C1= 86 ps
 7102 s: C1= 96 ps
 3551 s: C1= 124 ps
 1775 s: C1= 168 ps
 888 s: C1= 227 ps
 444 s: C1= 313 ps
 222 s: C1= 452 ps
 111 s: C1= 660 ps
 55 s: C1= 918 ps



03/20/15 bp0uptbb14220_9



227261 s: P1= 37 ps 227261 s: P2= 35 ps
 113630 s: P1= 36 ps 113630 s: P2= 68 ps
 56815 s: P1= 74 ps 56815 s: P2= 86 ps
 28408 s: P1= 121 ps 28408 s: P2= 122 ps
 14204 s: P1= 137 ps 14204 s: P2= 84 ps
 7102 s: P1= 118 ps 7102 s: P2= 125 ps
 3551 s: P1= 122 ps 3551 s: P2= 174 ps
 1775 s: P1= 177 ps 1775 s: P2= 234 ps
 888 s: P1= 233 ps 888 s: P2= 296 ps
 444 s: P1= 302 ps 444 s: P2= 392 ps
 222 s: P1= 449 ps 222 s: P2= 559 ps
 111 s: P1= 656 ps 111 s: P2= 813 ps
 55 s: P1= 945 ps 55 s: P2= 1156 ps



BP0U-PTBG

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 135155
 Computed code bias (P1/P2)/m = -167.601 -172.654
 Computed baseline (X,Y,Z)/m = -0.789 -1.271 0.459
 RMS of residuals /m = 0.640

Number of phase differences to fit baseline = 126067
 A priori baseline (X,Y,Z)/m = -0.789 -1.271 0.459
 24459 clock jitters computed out of 24471 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 28.2

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.135 0.025 0.241
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.131 0.029 0.245
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -0.654 -1.246 0.700
 Final baseline L2 (X,Y,Z)/m = -0.658 -1.242 0.703

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 135162

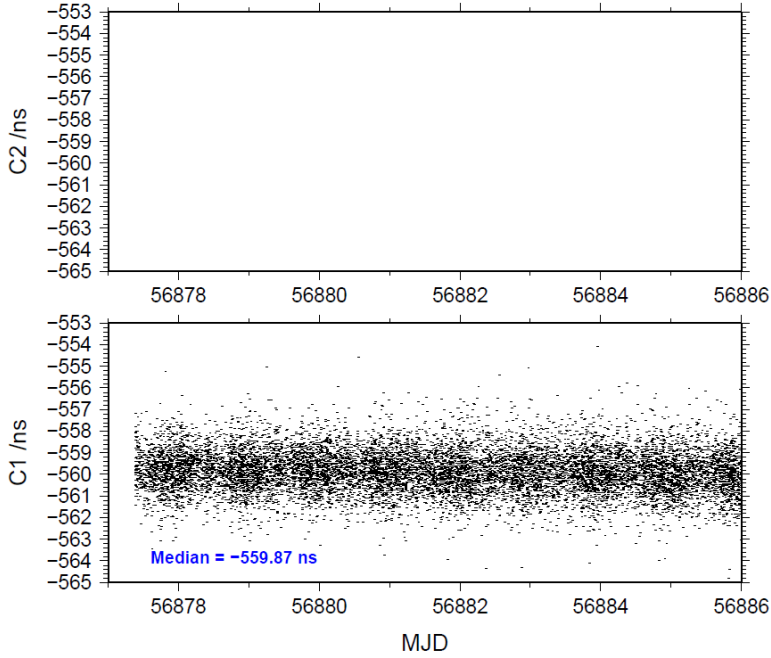
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 135111 -559.828 2.243
 C2: 0-NaN -NaN
 P1: 135104 -559.697 2.141
 P2: 135107 -576.551 2.423

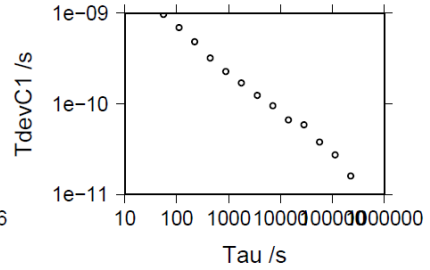
Number of 300s epochs in out file = 2482

Code #pts, median/ns, ave/ns, rms/ns
 C1: 13414 -559.868 -559.854 0.968
 C2: 0 0.000-NaN -NaN
 P1: 13414 -559.755 -559.718 1.015
 P2: 13414 -576.561 -576.542 1.177

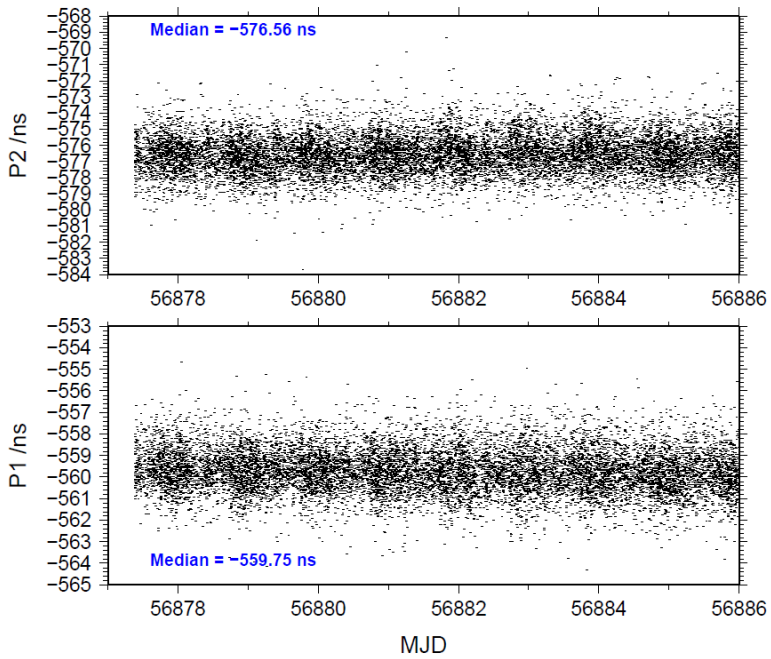
03/20/15 bp0uptbg14220_9



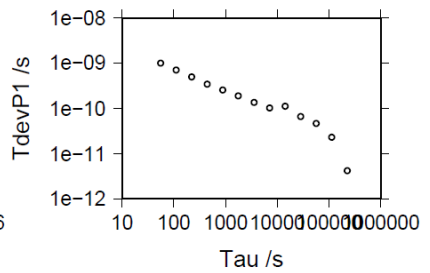
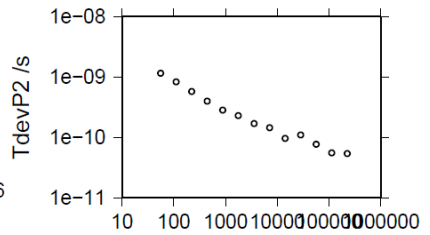
- 227291 s: C1= 16 ps
- 113645 s: C1= 27 ps
- 56823 s: C1= 38 ps
- 28411 s: C1= 59 ps
- 14206 s: C1= 67 ps
- 7103 s: C1= 96 ps
- 3551 s: C1= 124 ps
- 1776 s: C1= 171 ps
- 888 s: C1= 228 ps
- 444 s: C1= 321 ps
- 222 s: C1= 481 ps
- 111 s: C1= 690 ps
- 55 s: C1= 968 ps



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- | | |
|---------------------|---------------------|
| 227291 s: P1= 4 ps | 227291 s: P2= 54 ps |
| 113645 s: P1= 23 ps | 113645 s: P2= 55 ps |
| 56823 s: P1= 47 ps | 56823 s: P2= 77 ps |
| 28411 s: P1= 66 ps | 28411 s: P2= 109 ps |
| 14206 s: P1= 112 ps | 14206 s: P2= 96 ps |
| 7103 s: P1= 103 ps | 7103 s: P2= 145 ps |
| 3551 s: P1= 136 ps | 3551 s: P2= 169 ps |
| 1776 s: P1= 188 ps | 1776 s: P2= 228 ps |
| 888 s: P1= 253 ps | 888 s: P2= 285 ps |
| 444 s: P1= 345 ps | 444 s: P2= 397 ps |
| 222 s: P1= 502 ps | 222 s: P2= 573 ps |
| 111 s: P1= 712 ps | 111 s: P2= 835 ps |
| 55 s: P1= 1007 ps | 55 s: P2= 1162 ps |



BP1C-PTBB

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 187316
 Computed code bias (P1/P2)/m = -157.796 -161.045
 Computed baseline (X,Y,Z)/m = -2.750 2.000 1.875
 RMS of residuals /m = 0.576

Number of phase differences to fit baseline = 187212
 A priori baseline (X,Y,Z)/m = -2.750 2.000 1.875
 24838 clock jitters computed out of 24838 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 4.3

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 2
 Computed baseline L1 (X,Y,Z)/m = 0.006 0.015 0.030
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.010 0.018 0.032
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 0
 Iter 2 Large residuals L2= 2
 Computed baseline L1 (X,Y,Z)/m = 0.006 0.015 0.030
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.010 0.018 0.032
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -2.744 2.015 1.905
 Final baseline L2 (X,Y,Z)/m = -2.740 2.018 1.907

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 192332

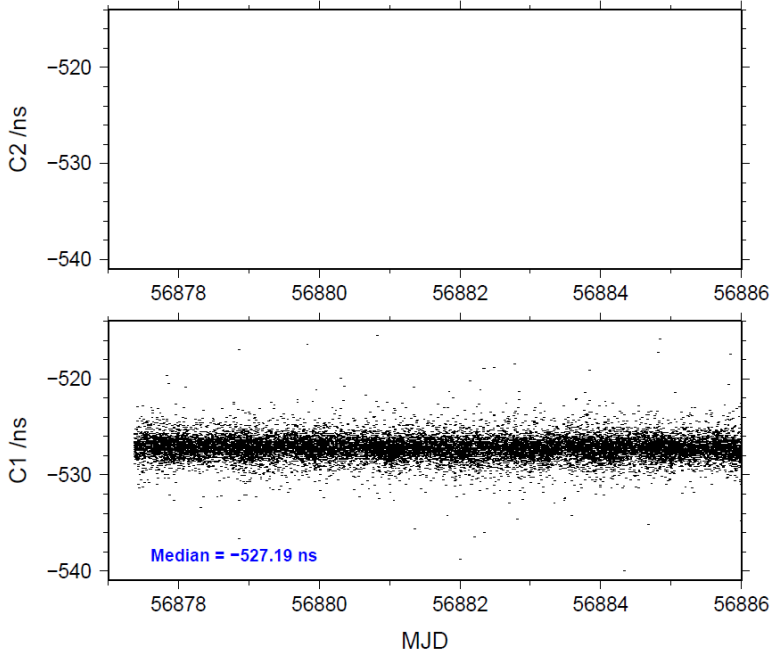
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 191291 -527.181 2.883
 C2: 0-NaN -NaN
 P1: 187847 -526.404 2.241
 P2: 187585 -537.251 2.313

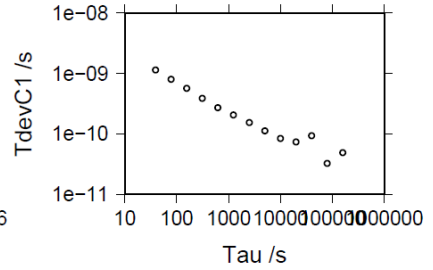
Number of 300s epochs in out file = 2485

Code #pts, median/ns, ave/ns, rms/ns
 C1: 19122 -527.192 -527.200 1.141
 C2: 0 0.000-NaN -NaN
 P1: 18767 -526.422 -526.422 0.943
 P2: 18746 -537.284 -537.265 0.981

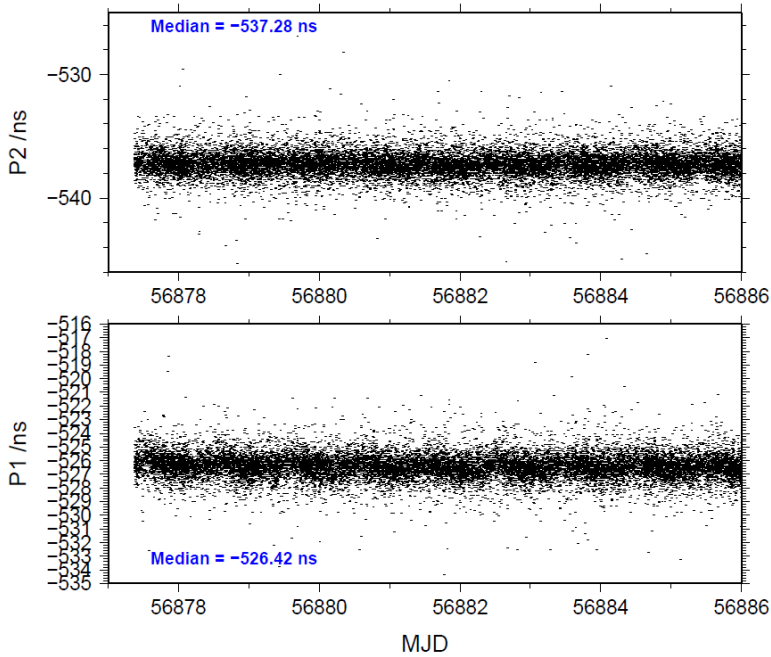
03/20/15 bp1cptbb14220_9



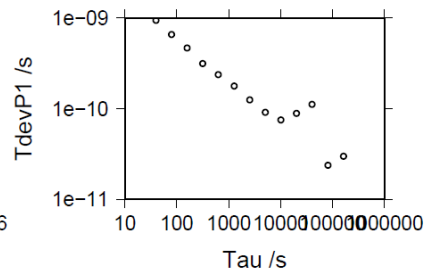
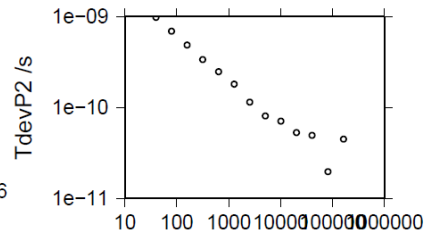
- 159633 s: C1= 49 ps
- 79816 s: C1= 33 ps
- 39908 s: C1= 93 ps
- 19954 s: C1= 73 ps
- 9977 s: C1= 84 ps
- 4989 s: C1= 112 ps
- 2494 s: C1= 155 ps
- 1247 s: C1= 205 ps
- 624 s: C1= 272 ps
- 312 s: C1= 389 ps
- 156 s: C1= 571 ps
- 78 s: C1= 804 ps
- 39 s: C1= 1138 ps



03/20/15 bp1cptbb14220_9



- 162653 s: P1= 30 ps
- 81326 s: P1= 24 ps
- 40663 s: P1= 111 ps
- 20332 s: P1= 89 ps
- 10166 s: P1= 75 ps
- 5083 s: P1= 91 ps
- 2541 s: P1= 125 ps
- 1271 s: P1= 178 ps
- 635 s: P1= 238 ps
- 318 s: P1= 314 ps
- 159 s: P1= 466 ps
- 79 s: P1= 654 ps
- 40 s: P1= 939 ps
- 162835 s: P2= 45 ps
- 81417 s: P2= 20 ps
- 40709 s: P2= 49 ps
- 20354 s: P2= 53 ps
- 10177 s: P2= 71 ps
- 5089 s: P2= 81 ps
- 2544 s: P2= 115 ps
- 1272 s: P2= 181 ps
- 636 s: P2= 248 ps
- 318 s: P2= 336 ps
- 159 s: P2= 486 ps
- 80 s: P2= 691 ps
- 40 s: P2= 986 ps



BP1C-PTBG

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 188529
 Computed code bias (P1/P2)/m = -150.071 -155.463
 Computed baseline (X,Y,Z)/m = 1.639 -1.716 -1.149
 RMS of residuals /m = 0.589

Number of phase differences to fit baseline = 188178
 A priori baseline (X,Y,Z)/m = 1.639 -1.716 -1.149
 24809 clock jitters computed out of 24809 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 4.3

Iter 1 Large residuals L1= 2
 Iter 1 Large residuals L2= 1
 Computed baseline L1 (X,Y,Z)/m = 0.037 0.041 0.026
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.033 0.044 0.022
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 2
 Iter 2 Large residuals L2= 1
 Computed baseline L1 (X,Y,Z)/m = 0.037 0.041 0.026
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.033 0.044 0.022
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = 1.676 -1.674 -1.123
 Final baseline L2 (X,Y,Z)/m = 1.672 -1.672 -1.127

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 192727

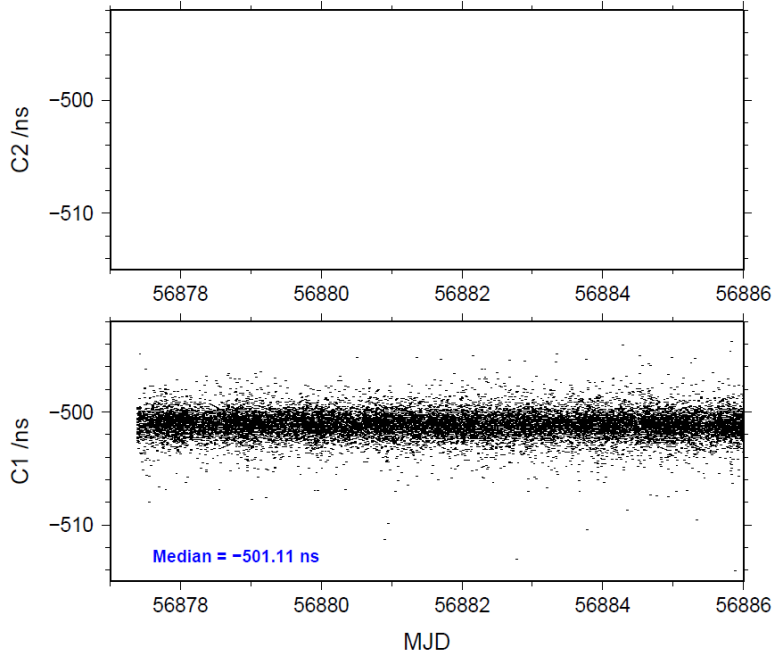
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 191768 -501.084 2.816
 C2: 0-NaN -NaN
 P1: 189124 -500.678 2.292
 P2: 188696 -518.655 2.378

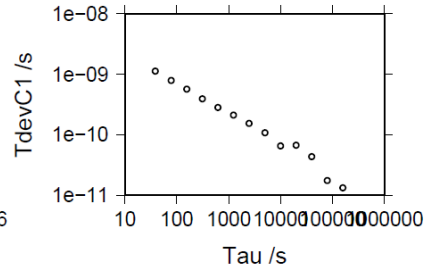
Number of 300s epochs in out file = 2483

Code #pts, median/ns, ave/ns, rms/ns
 C1: 19184 -501.105 -501.110 1.125
 C2: 0 0.000-NaN -NaN
 P1: 18899 -500.709 -500.699 0.972
 P2: 18863 -518.691 -518.672 1.027

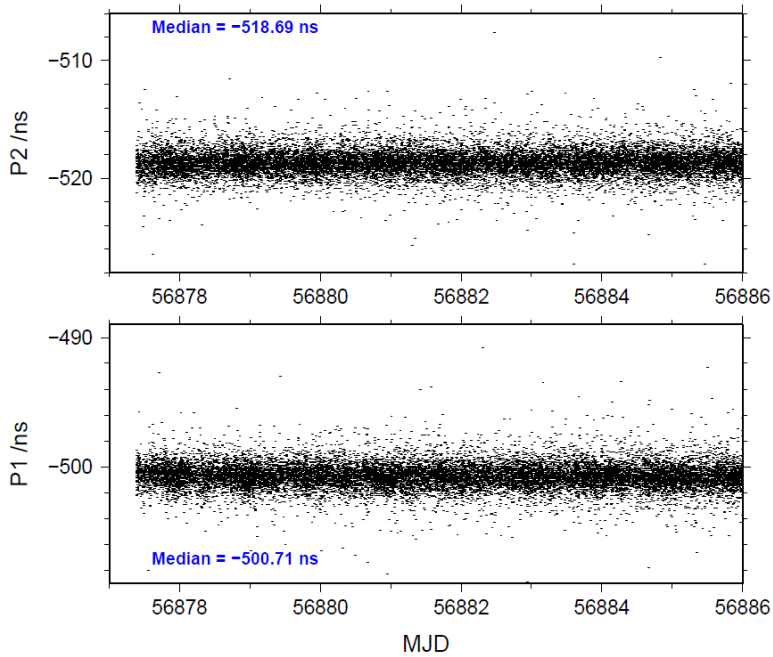
03/20/15 bp1cptbg14220_9



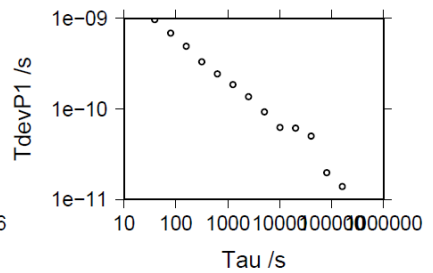
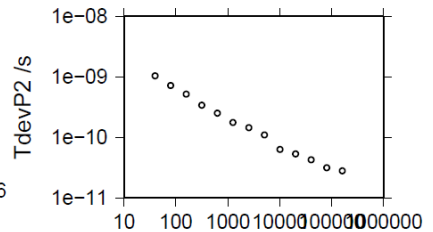
- 159309 s: C1= 13 ps
- 79655 s: C1= 18 ps
- 39827 s: C1= 44 ps
- 19914 s: C1= 67 ps
- 9957 s: C1= 66 ps
- 4978 s: C1= 109 ps
- 2489 s: C1= 154 ps
- 1245 s: C1= 212 ps
- 622 s: C1= 282 ps
- 311 s: C1= 392 ps
- 156 s: C1= 569 ps
- 78 s: C1= 789 ps
- 39 s: C1= 1122 ps



03/20/15 bp1cptbg14220_9



- 161712 s: P1= 14 ps
- 80856 s: P1= 20 ps
- 40428 s: P1= 50 ps
- 20214 s: P1= 62 ps
- 10107 s: P1= 63 ps
- 5053 s: P1= 92 ps
- 2527 s: P1= 136 ps
- 1263 s: P1= 186 ps
- 632 s: P1= 244 ps
- 316 s: P1= 332 ps
- 158 s: P1= 492 ps
- 79 s: P1= 684 ps
- 39 s: P1= 963 ps
- 162020 s: P2= 28 ps
- 81010 s: P2= 32 ps
- 40505 s: P2= 42 ps
- 20253 s: P2= 53 ps
- 10126 s: P2= 63 ps
- 5063 s: P2= 109 ps
- 2532 s: P2= 145 ps
- 1266 s: P2= 177 ps
- 633 s: P2= 253 ps
- 316 s: P2= 339 ps
- 158 s: P2= 520 ps
- 79 s: P2= 719 ps
- 40 s: P2= 1036 ps



2.13/ ROA (14237)Period

MJD 56894 to 56903

Delays

BP0U:

REFDLY = X_P = 125.69 ns (73.09+C166+BP1I+C153=73.09+52.6)
 CABDLY = X_C = 182.0 ns (C134)

BP1C:

X_O = 183.59 ns (198.93-15.34)
 X_P = 125.69 ns (73.09+C166+BP1I+C157)
 REFDLY = 309.28 ns
 CABDLY = X_C = 235.7 ns (C131)

RO_4:

REFDLY = 218.0 ns
 CABDLY = 217.5 ns

RO_5:

REFDLY = 36.2 ns
 CABDLY = 127.5 ns

RO_6:

REFDLY = 217.9 ns
 CABDLY = 66.7 ns

RO_7:

REFDLY = 171.0 ns
 CABDLY = 81.9 ns

REFDLY values for RO_4, RO_5, RO_6, RO_7 documented in a message 15 September 2014 by H. Esteban.

“For RO_4 (PolaRx2) the measurement latching bias of 8.7 ns is not applied”

Setup at the ROA

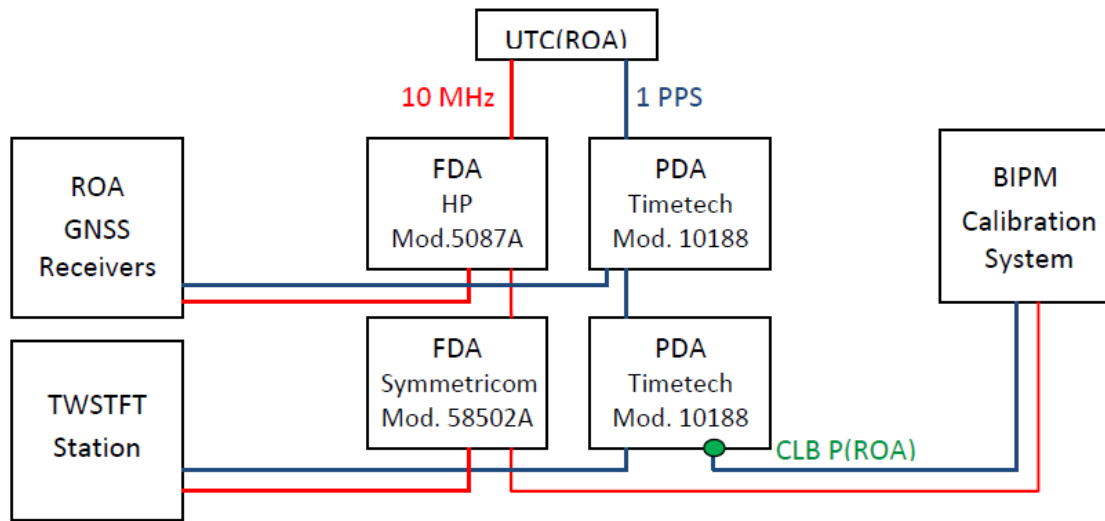


Fig. Scheme of signal distribution and definition of the reference point CLB P(ROA).

BP0U-RO_4

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 128030
 Computed code bias (P1/P2)/m = -83.546 -83.206
 Computed baseline (X,Y,Z)/m = -2.065 -0.284 2.307
 RMS of residuals /m = 0.474

Number of phase differences to fit baseline = 100103
 A priori baseline (X,Y,Z)/m = -2.065 -0.284 2.307
 19237 clock jitters computed out of 19679 intervals
 AVE jitter /ps = 2.2 RMS jitter /ps = 51.1

Iter 1 Large residuals L1= 684
 Iter 1 Large residuals L2= 685
 Computed baseline L1 (X,Y,Z)/m = 0.069 -0.016 0.057
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.046 -0.006 0.042
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 684
 Iter 2 Large residuals L2= 685
 Computed baseline L1 (X,Y,Z)/m = 0.069 -0.015 0.058
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.046 -0.006 0.042
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -1.997 -0.299 2.365
 Final baseline L2 (X,Y,Z)/m = -2.019 -0.290 2.349

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 128067

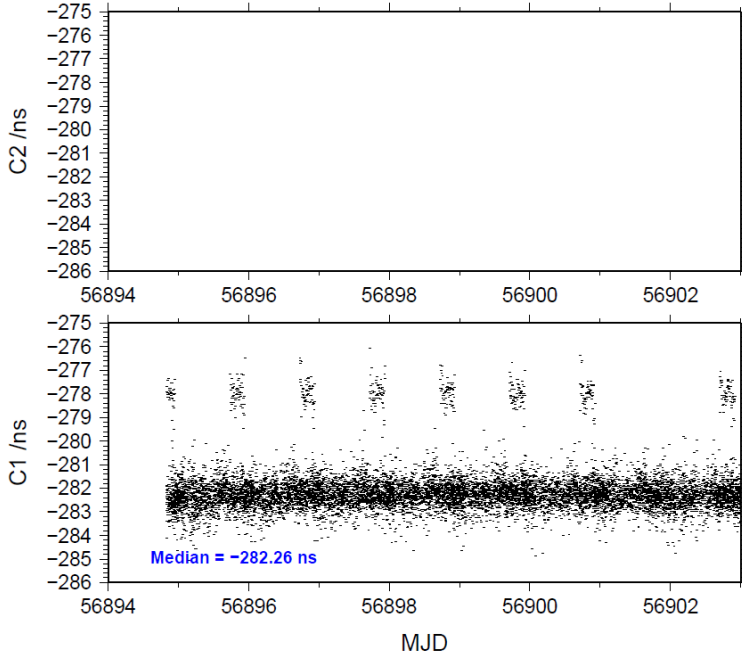
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 128010 -282.108 1.319
 C2: 0-NaN -NaN
 P1: 127973 -278.893 1.461
 P2: 127972 -277.689 1.749

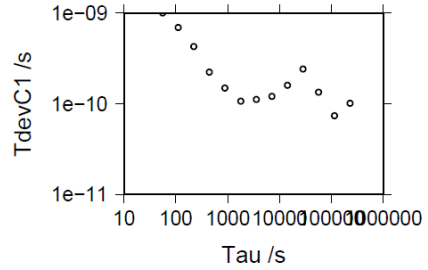
Number of 300s epochs in out file = 2352

Code #pts, median/ns, ave/ns, rms/ns
 C1: 12671 -282.261 -282.115 0.974
 C2: 0 0.000-NaN -NaN
 P1: 12671 -278.934 -278.913 0.770
 P2: 12671 -277.662 -277.682 1.033

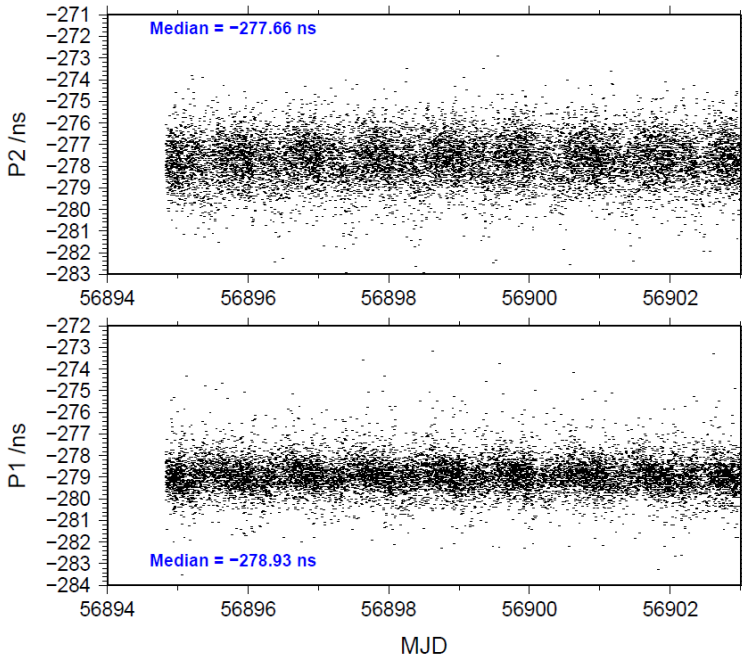
03/20/15 bp0uro_414237_9



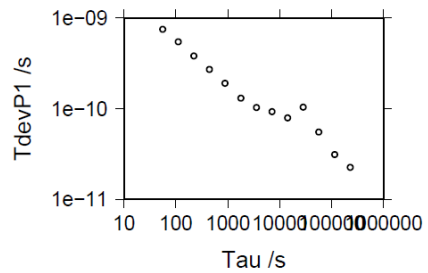
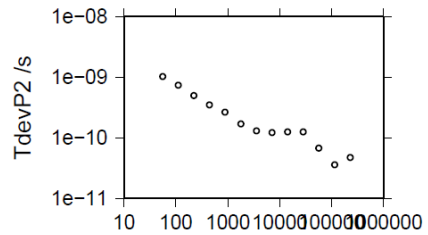
228012 s: C1= 101 ps
 114006 s: C1= 74 ps
 57003 s: C1= 135 ps
 28501 s: C1= 241 ps
 14251 s: C1= 160 ps
 7125 s: C1= 121 ps
 3563 s: C1= 111 ps
 1781 s: C1= 107 ps
 891 s: C1= 150 ps
 445 s: C1= 223 ps
 223 s: C1= 429 ps
 111 s: C1= 692 ps
 56 s: C1= 999 ps



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228012 s: P1= 23 ps 228012 s: P2= 47 ps
 114006 s: P1= 31 ps 114006 s: P2= 36 ps
 57003 s: P1= 55 ps 57003 s: P2= 67 ps
 28501 s: P1= 104 ps 28501 s: P2= 125 ps
 14251 s: P1= 79 ps 14251 s: P2= 126 ps
 7125 s: P1= 93 ps 7125 s: P2= 122 ps
 3563 s: P1= 103 ps 3563 s: P2= 130 ps
 1781 s: P1= 130 ps 1781 s: P2= 169 ps
 891 s: P1= 191 ps 891 s: P2= 264 ps
 445 s: P1= 271 ps 445 s: P2= 350 ps
 223 s: P1= 383 ps 223 s: P2= 498 ps
 111 s: P1= 544 ps 111 s: P2= 737 ps
 56 s: P1= 750 ps 56 s: P2= 1023 ps



BP0U-RO_5

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 127717
 Computed code bias (P1/P2)/m = -24.683 -22.269
 Computed baseline (X,Y,Z)/m = -2.178 -9.956 -0.514
 RMS of residuals /m = 0.510

Number of phase differences to fit baseline = 120821
 A priori baseline (X,Y,Z)/m = -2.178 -9.956 -0.514
 23017 clock jitters computed out of 23099 intervals
 AVE jitter /ps = 0.2 RMS jitter /ps = 36.6

Iter 1 Large residuals L1= 5
 Iter 1 Large residuals L2= 5
 Computed baseline L1 (X,Y,Z)/m = 0.070 0.011 0.029
 RMS of residuals L1 /m = 0.002
 Computed baseline L2 (X,Y,Z)/m = 0.050 0.016 0.011
 RMS of residuals L2 /m = 0.002

Iter 2 Large residuals L1= 5
 Iter 2 Large residuals L2= 5
 Computed baseline L1 (X,Y,Z)/m = 0.070 0.011 0.029
 RMS of residuals L1 /m = 0.002
 Computed baseline L2 (X,Y,Z)/m = 0.050 0.016 0.011
 RMS of residuals L2 /m = 0.002

Final baseline L1 (X,Y,Z)/m = -2.108 -9.945 -0.486
 Final baseline L2 (X,Y,Z)/m = -2.127 -9.940 -0.503

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 127723

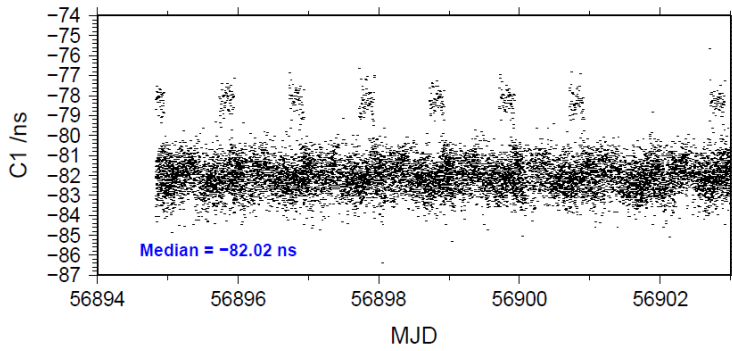
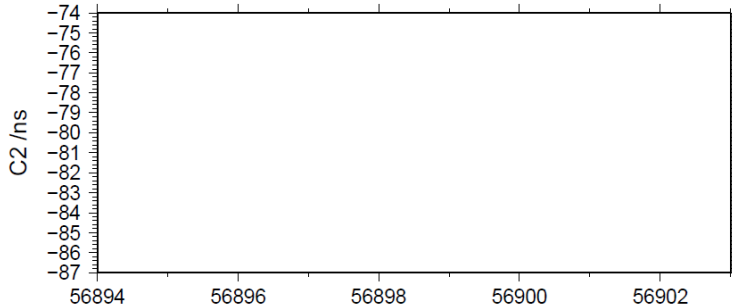
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 127660 -81.904 1.440
 C2: 0-NaN -NaN
 P1: 127654 -82.504 1.737
 P2: 127653 -74.390 1.754

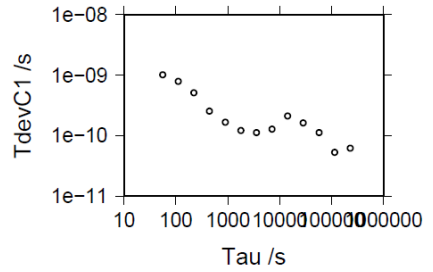
Number of 300s epochs in out file = 2349

Code #pts, median/ns, ave/ns, rms/ns
 C1: 12639 -82.018 -81.912 1.045
 C2: 0 0.000-NaN -NaN
 P1: 12639 -82.539 -82.533 0.865
 P2: 12639 -74.392 -74.383 0.993

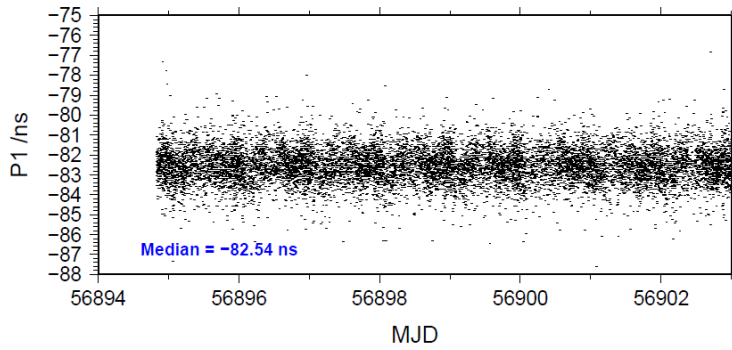
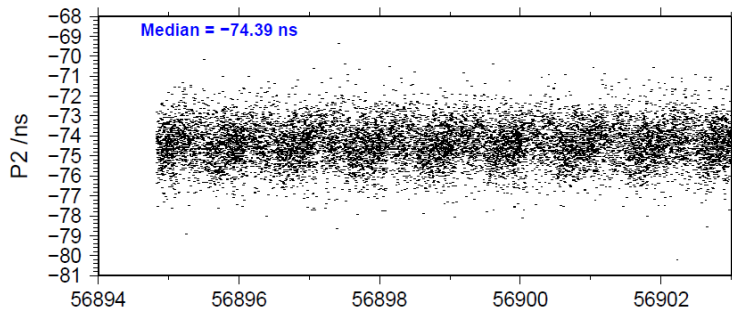
03/20/15 bp0uro_514237_9



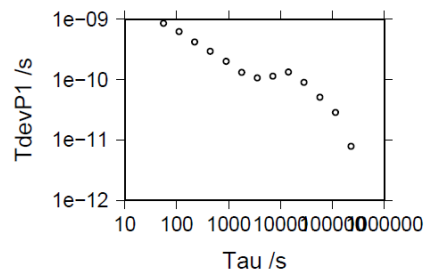
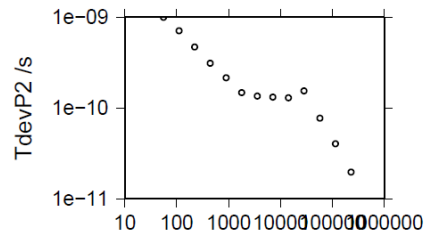
228589 s: C1= 62 ps
114295 s: C1= 53 ps
57147 s: C1= 113 ps
28574 s: C1= 164 ps
14287 s: C1= 213 ps
7143 s: C1= 129 ps
3572 s: C1= 113 ps
1786 s: C1= 121 ps
893 s: C1= 167 ps
446 s: C1= 253 ps
223 s: C1= 513 ps
112 s: C1= 786 ps
56 s: C1= 1017 ps



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228589 s: P1= 8 ps 228589 s: P2= 20 ps
114295 s: P1= 29 ps 114295 s: P2= 40 ps
57147 s: P1= 51 ps 57147 s: P2= 77 ps
28574 s: P1= 90 ps 28574 s: P2= 154 ps
14287 s: P1= 134 ps 14287 s: P2= 130 ps
7143 s: P1= 114 ps 7143 s: P2= 132 ps
3572 s: P1= 107 ps 3572 s: P2= 135 ps
1786 s: P1= 132 ps 1786 s: P2= 148 ps
893 s: P1= 200 ps 893 s: P2= 216 ps
446 s: P1= 295 ps 446 s: P2= 311 ps
223 s: P1= 418 ps 223 s: P2= 472 ps
112 s: P1= 620 ps 112 s: P2= 709 ps
56 s: P1= 857 ps 56 s: P2= 999 ps



BP0U-RO_6

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 128064
 Computed code bias (P1/P2)/m = 4.896 7.390
 Computed baseline (X,Y,Z)/m = -1.595 -10.022 -1.340
 RMS of residuals /m = 0.434

Number of phase differences to fit baseline = 99419
 A priori baseline (X,Y,Z)/m = -1.595 -10.022 -1.340
 19080 clock jitters computed out of 19543 intervals
 AVE jitter /ps = 1.4 RMS jitter /ps = 51.5

Iter 1 Large residuals L1= 733
 Iter 1 Large residuals L2= 736
 Computed baseline L1 (X,Y,Z)/m = 0.056 0.002 0.053
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.037 0.010 0.034
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 733
 Iter 2 Large residuals L2= 736
 Computed baseline L1 (X,Y,Z)/m = 0.057 0.002 0.053
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.038 0.010 0.034
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -1.538 -10.020 -1.287
 Final baseline L2 (X,Y,Z)/m = -1.557 -10.012 -1.306

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 128070

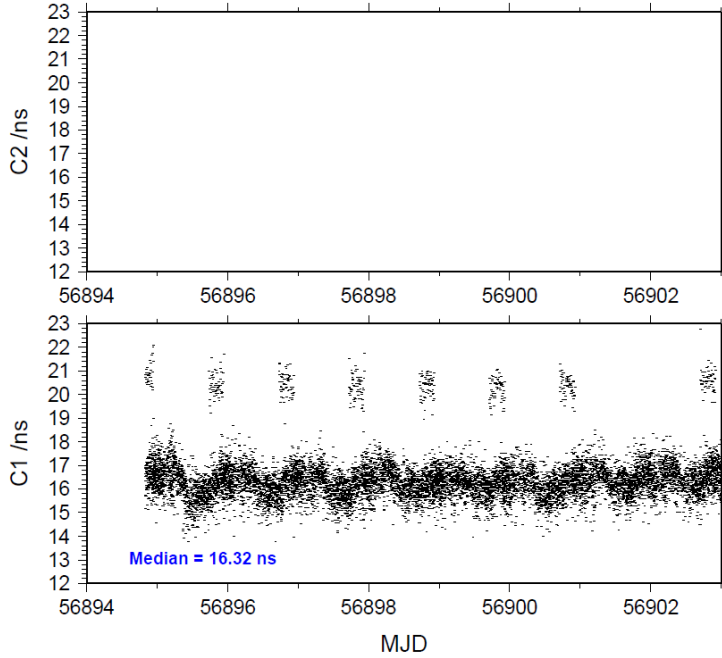
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 128013 16.435 1.323
 C2: 0-NaN -NaN
 P1: 128007 16.149 1.302
 P2: 128006 24.537 1.618

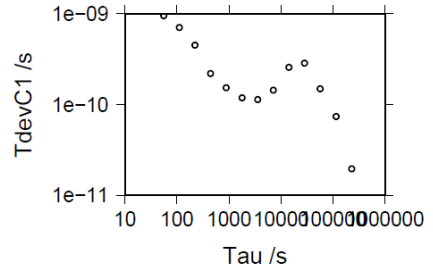
Number of 300s epochs in out file = 2352

Code #pts, median/ns, ave/ns, rms/ns
 C1: 12671 16.322 16.435 0.996
 C2: 0 0.000-NaN -NaN
 P1: 12671 16.140 16.137 0.658
 P2: 12671 24.542 24.549 0.899

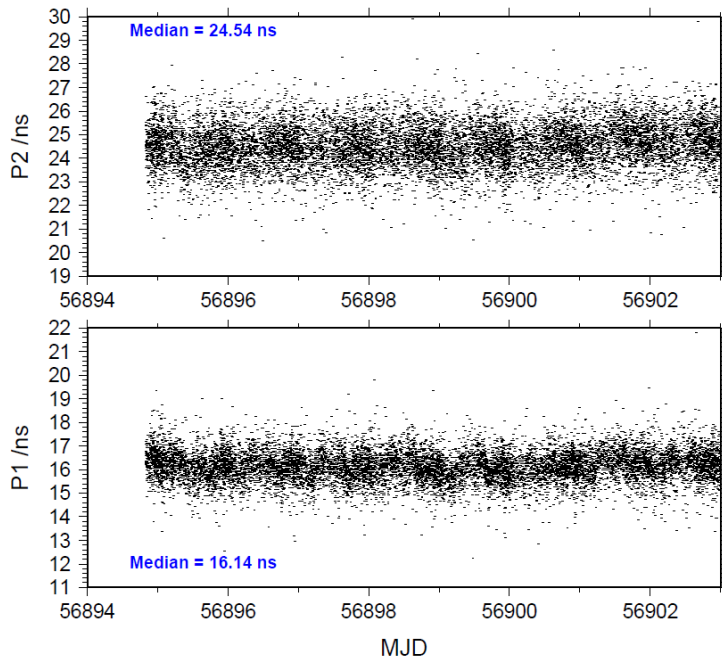
03/20/15 bp0uro_614237_9



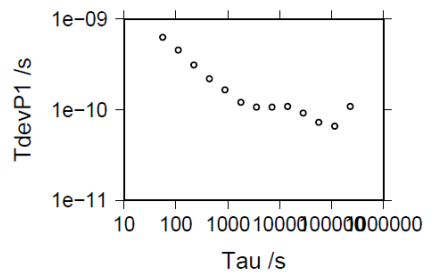
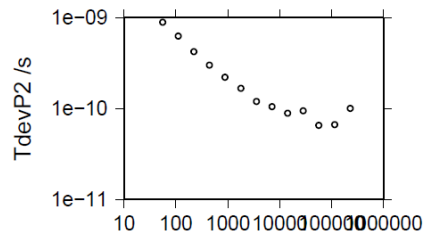
- 228012 s: C1= 20 ps
- 114006 s: C1= 74 ps
- 57003 s: C1= 148 ps
- 28501 s: C1= 286 ps
- 14251 s: C1= 256 ps
- 7125 s: C1= 144 ps
- 3563 s: C1= 113 ps
- 1781 s: C1= 119 ps
- 891 s: C1= 153 ps
- 445 s: C1= 220 ps
- 223 s: C1= 451 ps
- 111 s: C1= 706 ps
- 56 s: C1= 950 ps



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- 228012 s: P1= 109 ps 228012 s: P2= 100 ps
- 114006 s: P1= 66 ps 114006 s: P2= 67 ps
- 57003 s: P1= 73 ps 57003 s: P2= 65 ps
- 28501 s: P1= 92 ps 28501 s: P2= 95 ps
- 14251 s: P1= 109 ps 14251 s: P2= 89 ps
- 7125 s: P1= 107 ps 7125 s: P2= 105 ps
- 3563 s: P1= 107 ps 3563 s: P2= 120 ps
- 1781 s: P1= 121 ps 1781 s: P2= 168 ps
- 891 s: P1= 165 ps 891 s: P2= 220 ps
- 445 s: P1= 220 ps 445 s: P2= 301 ps
- 223 s: P1= 312 ps 223 s: P2= 424 ps
- 111 s: P1= 454 ps 111 s: P2= 628 ps
- 56 s: P1= 626 ps 56 s: P2= 895 ps



BP0U-RO_7

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 128059
 Computed code bias (P1/P2)/m = -13.909 -11.601
 Computed baseline (X,Y,Z)/m = -2.187 -9.935 -0.534
 RMS of residuals /m = 0.418

Number of phase differences to fit baseline = 100240
 A priori baseline (X,Y,Z)/m = -2.187 -9.935 -0.534
 19233 clock jitters computed out of 19693 intervals
 AVE jitter /ps = 2.3 RMS jitter /ps = 51.0

Iter 1 Large residuals L1= 703
 Iter 1 Large residuals L2= 705
 Computed baseline L1 (X,Y,Z)/m = 0.075 0.001 0.045
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.059 0.005 0.029
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 703
 Iter 2 Large residuals L2= 705
 Computed baseline L1 (X,Y,Z)/m = 0.076 0.001 0.045
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.059 0.005 0.029
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -2.111 -9.934 -0.489
 Final baseline L2 (X,Y,Z)/m = -2.128 -9.930 -0.505

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 128070

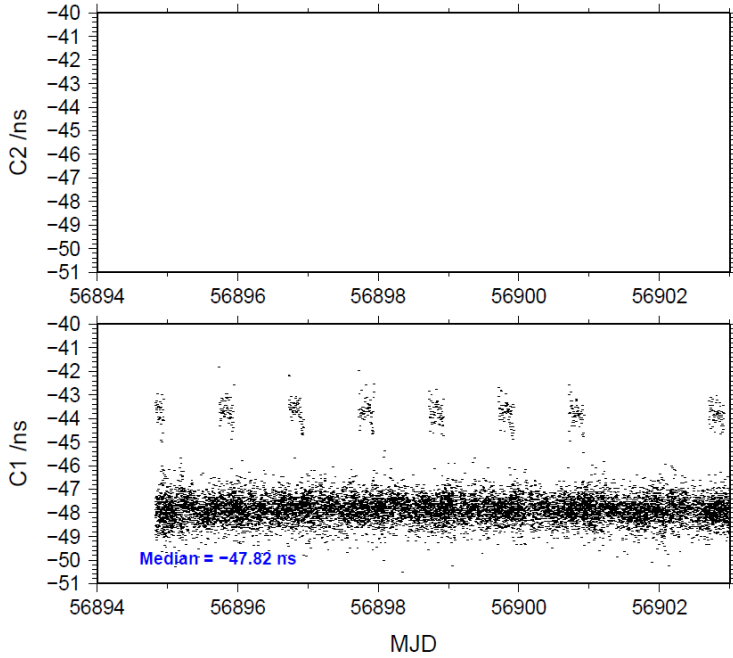
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 128013 -47.699 1.240
 C2: 0-NaN -NaN
 P1: 128002 -46.603 1.259
 P2: 128001 -38.847 1.543

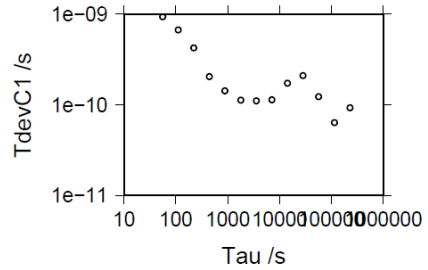
Number of 300s epochs in out file = 2352

Code #pts, median/ns, ave/ns, rms/ns
 C1: 12671 -47.823 -47.698 0.926
 C2: 0 0.000-NaN -NaN
 P1: 12671 -46.613 -46.614 0.630
 P2: 12671 -38.839 -38.835 0.903

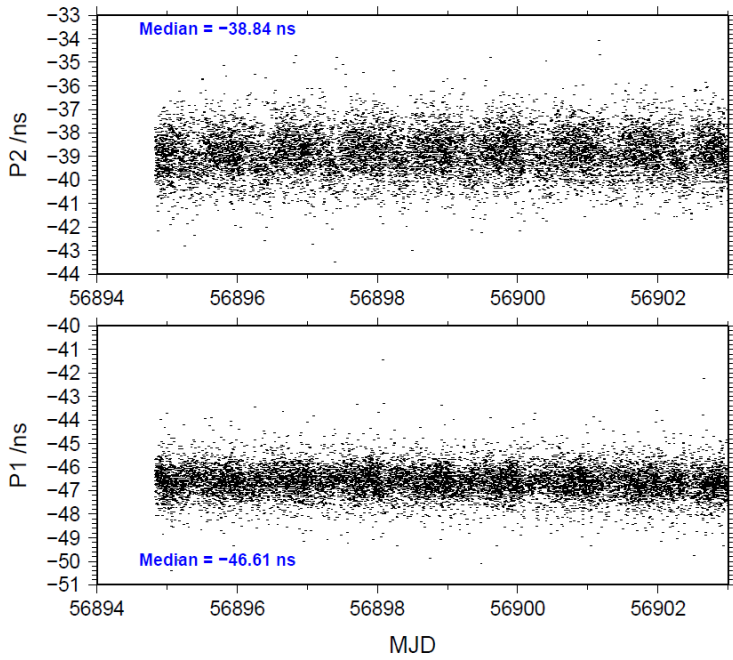
03/20/15 bp0uro_714237_9



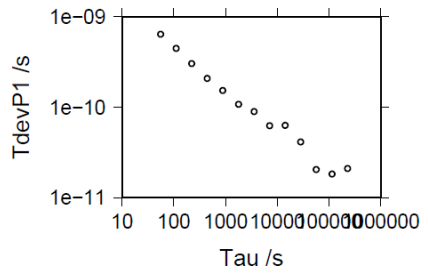
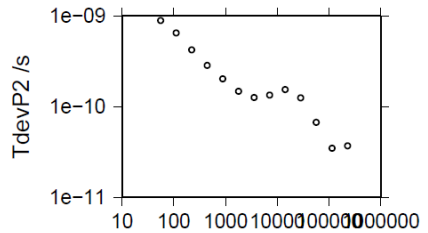
- 228012 s: C1= 93 ps
- 114006 s: C1= 64 ps
- 57003 s: C1= 123 ps
- 28501 s: C1= 209 ps
- 14251 s: C1= 173 ps
- 7125 s: C1= 114 ps
- 3563 s: C1= 110 ps
- 1781 s: C1= 113 ps
- 891 s: C1= 143 ps
- 445 s: C1= 204 ps
- 223 s: C1= 424 ps
- 111 s: C1= 669 ps
- 56 s: C1= 932 ps



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- | | |
|---------------------|---------------------|
| 228012 s: P1= 21 ps | 228012 s: P2= 37 ps |
| 114006 s: P1= 18 ps | 114006 s: P2= 35 ps |
| 57003 s: P1= 21 ps | 57003 s: P2= 67 ps |
| 28501 s: P1= 41 ps | 28501 s: P2= 125 ps |
| 14251 s: P1= 63 ps | 14251 s: P2= 155 ps |
| 7125 s: P1= 62 ps | 7125 s: P2= 134 ps |
| 3563 s: P1= 89 ps | 3563 s: P2= 126 ps |
| 1781 s: P1= 108 ps | 1781 s: P2= 148 ps |
| 891 s: P1= 153 ps | 891 s: P2= 204 ps |
| 445 s: P1= 208 ps | 445 s: P2= 285 ps |
| 223 s: P1= 305 ps | 223 s: P2= 424 ps |
| 111 s: P1= 447 ps | 111 s: P2= 653 ps |
| 56 s: P1= 637 ps | 56 s: P2= 891 ps |



BP1C-RO_4

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 193942
 Computed code bias (P1/P2)/m = -65.616 -65.691
 Computed baseline (X,Y,Z)/m = -1.664 0.144 2.165
 RMS of residuals /m = 0.469

Number of phase differences to fit baseline = 191092
 A priori baseline (X,Y,Z)/m = -1.664 0.144 2.165
 23411 clock jitters computed out of 23453 intervals
 AVE jitter /ps = 0.1 RMS jitter /ps = 6.0

Iter 1 Large residuals L1= 67
 Iter 1 Large residuals L2= 67
 Computed baseline L1 (X,Y,Z)/m = -0.080 -0.024 -0.104
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.097 -0.028 -0.119
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 67
 Iter 2 Large residuals L2= 67
 Computed baseline L1 (X,Y,Z)/m = -0.080 -0.024 -0.104
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.097 -0.028 -0.119
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -1.743 0.120 2.060
 Final baseline L2 (X,Y,Z)/m = -1.760 0.117 2.046

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 196074

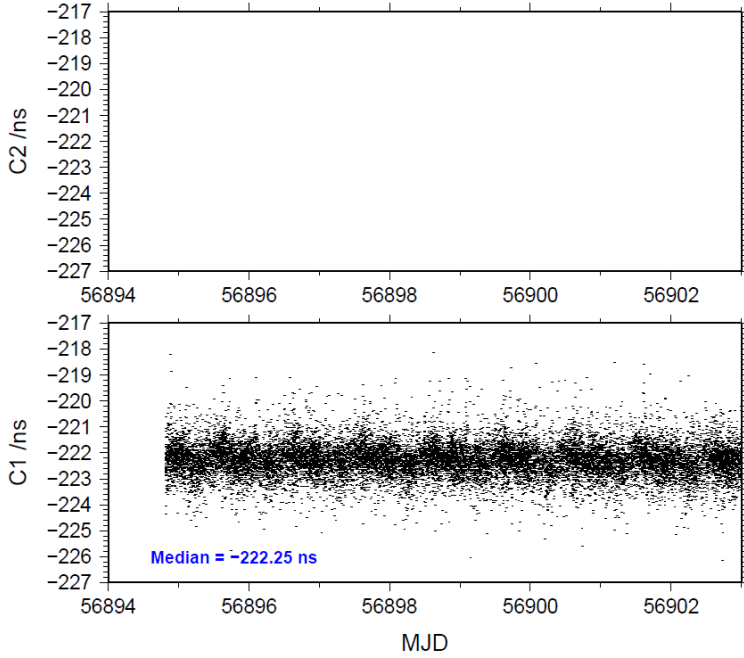
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 195910 -222.250 1.269
 C2: 0-NaN -NaN
 P1: 193821 -218.637 1.510
 P2: 193813 -218.846 1.740

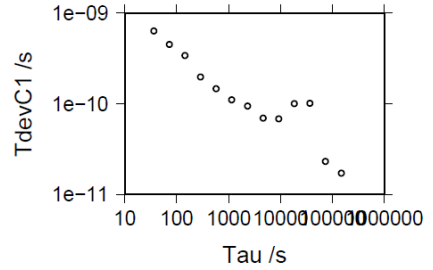
Number of 300s epochs in out file = 2358

Code #pts, median/ns, ave/ns, rms/ns
 C1: 19582 -222.255 -222.261 0.647
 C2: 0 0.000-NaN -NaN
 P1: 19377 -218.633 -218.647 0.871
 P2: 19376 -218.805 -218.851 1.128

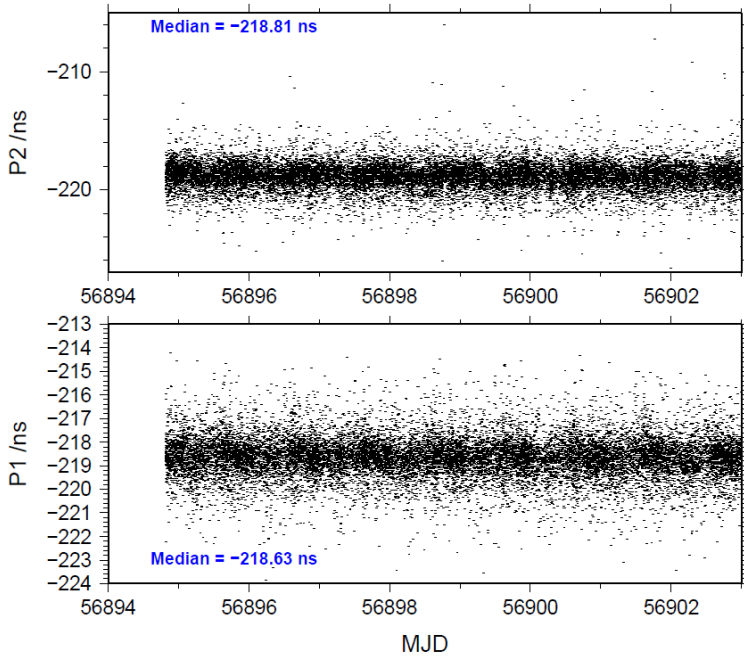
03/20/15 bp1cro_414237_9



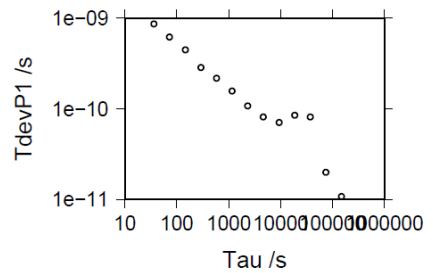
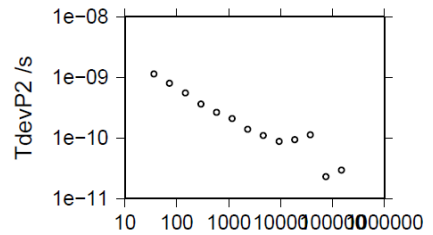
- 147913 s: C1= 17 ps
- 73956 s: C1= 23 ps
- 36978 s: C1= 101 ps
- 18489 s: C1= 100 ps
- 9245 s: C1= 69 ps
- 4622 s: C1= 70 ps
- 2311 s: C1= 94 ps
- 1156 s: C1= 111 ps
- 578 s: C1= 146 ps
- 289 s: C1= 198 ps
- 144 s: C1= 339 ps
- 72 s: C1= 452 ps
- 36 s: C1= 632 ps



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- 149478 s: P1= 11 ps
- 74739 s: P1= 20 ps
- 37369 s: P1= 81 ps
- 18685 s: P1= 85 ps
- 9342 s: P1= 71 ps
- 4671 s: P1= 81 ps
- 2336 s: P1= 107 ps
- 1168 s: P1= 156 ps
- 584 s: P1= 217 ps
- 292 s: P1= 284 ps
- 146 s: P1= 445 ps
- 73 s: P1= 616 ps
- 36 s: P1= 863 ps
- 149486 s: P2= 29 ps
- 74743 s: P2= 23 ps
- 37371 s: P2= 113 ps
- 18686 s: P2= 94 ps
- 9343 s: P2= 87 ps
- 4671 s: P2= 110 ps
- 2336 s: P2= 139 ps
- 1168 s: P2= 209 ps
- 584 s: P2= 265 ps
- 292 s: P2= 363 ps
- 146 s: P2= 555 ps
- 73 s: P2= 799 ps
- 36 s: P2= 1140 ps



BP1C-RO_5

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 175240
 Computed code bias (P1/P2)/m = -6.817 -4.782
 Computed baseline (X,Y,Z)/m = -1.705 -9.521 -0.648
 RMS of residuals /m = 0.521

Number of phase differences to fit baseline = 139906
 A priori baseline (X,Y,Z)/m = -1.705 -9.521 -0.648
 19437 clock jitters computed out of 19844 intervals
 AVE jitter /ps = -2.2 RMS jitter /ps = 50.4

Iter 1 Large residuals L1= 796
 Iter 1 Large residuals L2= 794
 Computed baseline L1 (X,Y,Z)/m = -0.147 0.012 -0.145
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.156 0.009 -0.150
 RMS of residuals L2 /m = 0.003

Iter 2 Large residuals L1= 796
 Iter 2 Large residuals L2= 794
 Computed baseline L1 (X,Y,Z)/m = -0.147 0.012 -0.146
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.156 0.009 -0.151
 RMS of residuals L2 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -1.853 -9.510 -0.794
 Final baseline L2 (X,Y,Z)/m = -1.862 -9.512 -0.799

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 175970

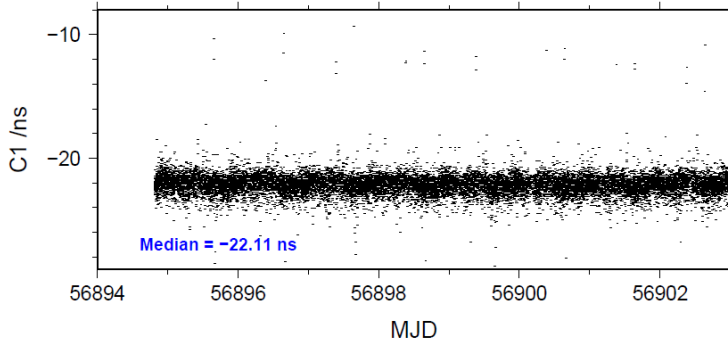
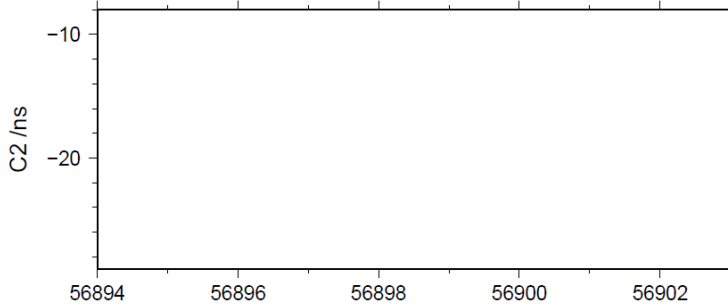
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 175848 -22.130 1.299
 C2: 0-NaN -NaN
 P1: 175120 -22.320 1.828
 P2: 175114 -15.511 1.923

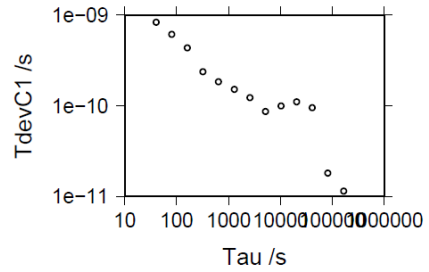
Number of 300s epochs in out file = 2355

Code #pts, median/ns, ave/ns, rms/ns
 C1: 17564 -22.110 -22.132 0.849
 C2: 0 0.000-NaN -NaN
 P1: 17494 -22.263 -22.324 0.918
 P2: 17494 -15.490 -15.522 1.152

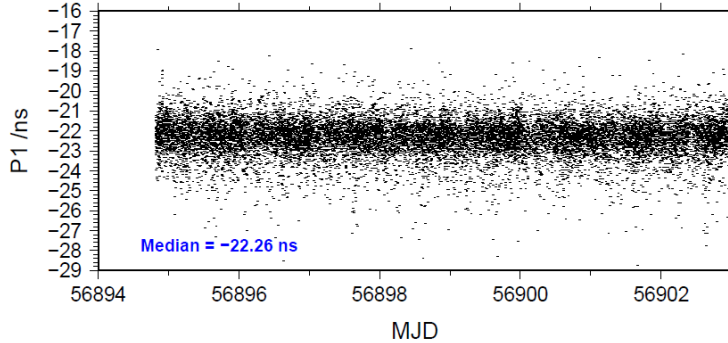
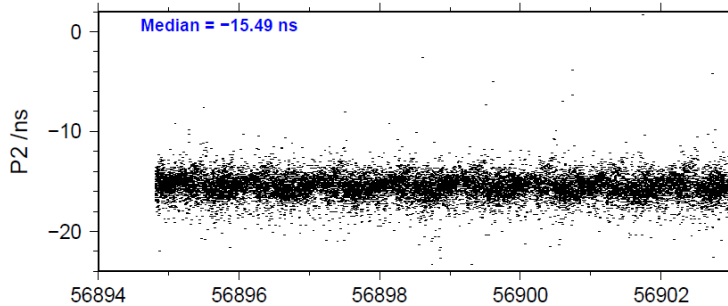
03/20/15 bp1cro_514237_9



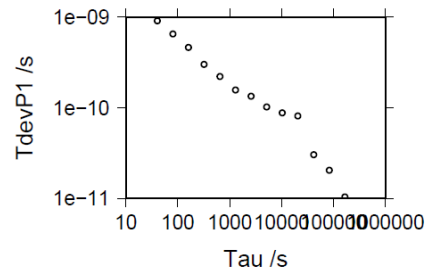
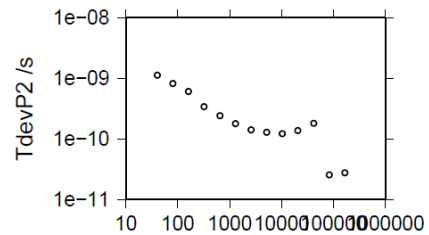
- 164908 s: C1= 11 ps
- 82454 s: C1= 18 ps
- 41227 s: C1= 95 ps
- 20614 s: C1= 110 ps
- 10307 s: C1= 100 ps
- 5153 s: C1= 87 ps
- 2577 s: C1= 122 ps
- 1288 s: C1= 151 ps
- 644 s: C1= 185 ps
- 322 s: C1= 237 ps
- 161 s: C1= 434 ps
- 81 s: C1= 615 ps
- 40 s: C1= 833 ps



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- | | |
|---------------------|---------------------|
| 165568 s: P1= 10 ps | 165568 s: P2= 28 ps |
| 82784 s: P1= 21 ps | 82784 s: P2= 25 ps |
| 41392 s: P1= 31 ps | 41392 s: P2= 182 ps |
| 20696 s: P1= 81 ps | 20696 s: P2= 137 ps |
| 10348 s: P1= 88 ps | 10348 s: P2= 121 ps |
| 5174 s: P1= 102 ps | 5174 s: P2= 128 ps |
| 2587 s: P1= 134 ps | 2587 s: P2= 141 ps |
| 1294 s: P1= 157 ps | 1294 s: P2= 177 ps |
| 647 s: P1= 222 ps | 647 s: P2= 241 ps |
| 323 s: P1= 302 ps | 323 s: P2= 341 ps |
| 162 s: P1= 463 ps | 162 s: P2= 610 ps |
| 81 s: P1= 652 ps | 81 s: P2= 821 ps |
| 40 s: P1= 910 ps | 40 s: P2= 1133 ps |



BP1C-RO_6

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 200493
 Computed code bias (P1/P2)/m = 22.795 24.893
 Computed baseline (X,Y,Z)/m = -1.163 -9.609 -1.485
 RMS of residuals /m = 0.421

Number of phase differences to fit baseline = 197339
 A priori baseline (X,Y,Z)/m = -1.163 -9.609 -1.485
 23371 clock jitters computed out of 23400 intervals
 AVE jitter /ps = -0.7 RMS jitter /ps = 8.5

Iter 1 Large residuals L1= 59
 Iter 1 Large residuals L2= 60
 Computed baseline L1 (X,Y,Z)/m = -0.112 0.008 -0.096
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.120 0.010 -0.105
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 59
 Iter 2 Large residuals L2= 60
 Computed baseline L1 (X,Y,Z)/m = -0.112 0.008 -0.096
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.120 0.010 -0.105
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -1.275 -9.601 -1.581
 Final baseline L2 (X,Y,Z)/m = -1.283 -9.599 -1.591

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 202602

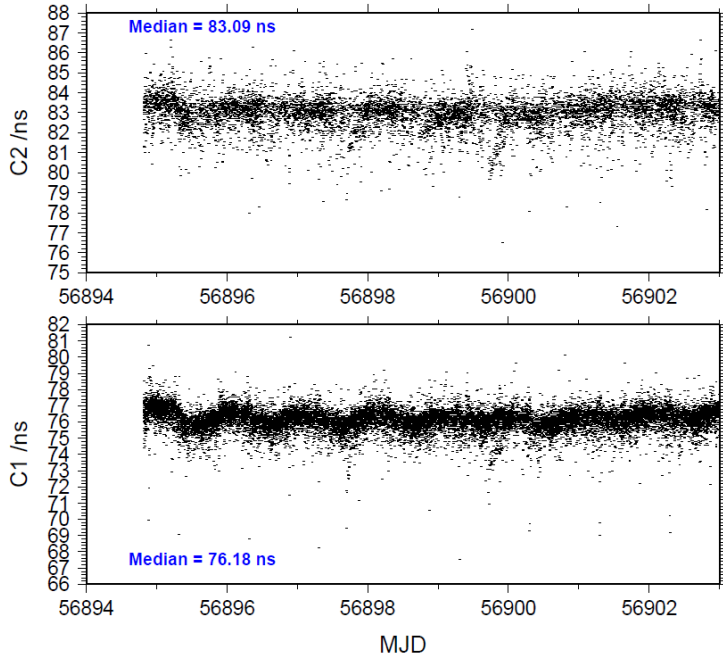
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 202327 76.127 1.243
 C2: 88206 83.007 1.556
 P1: 200342 76.315 1.238
 P2: 200263 83.345 1.736

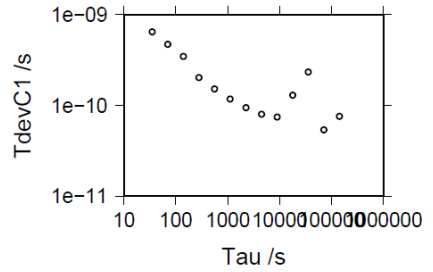
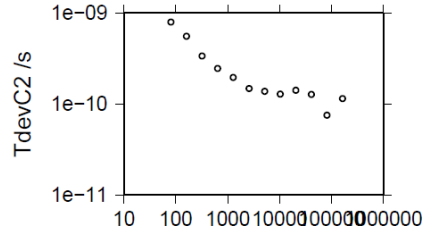
Number of 300s epochs in out file = 2358

Code #pts, median/ns, ave/ns, rms/ns
 C1: 20214 76.184 76.130 0.710
 C2: 8801 83.094 83.009 0.800
 P1: 20019 76.370 76.316 0.694
 P2: 20011 83.408 83.342 1.146

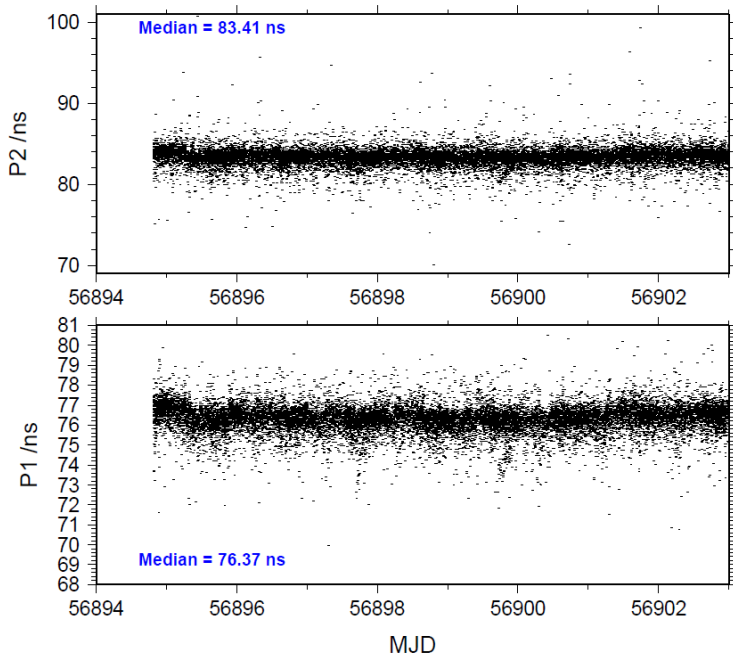
03/20/15 bp1cro_614237_9



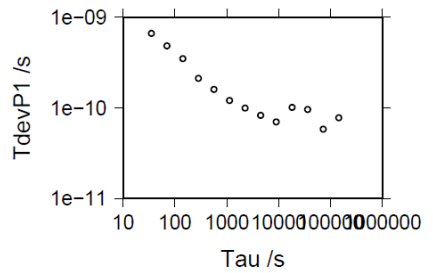
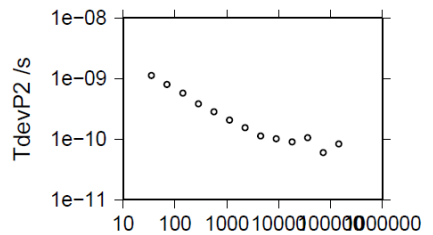
143288 s: C1= 76 ps
 71644 s: C1= 54 ps
 35822 s: C1= 234 ps
 17911 s: C1= 130 ps
 8956 s: C1= 75 ps
 4478 s: C1= 80 ps
 2239 s: C1= 94 ps
 1119 s: C1= 117 ps
 560 s: C1= 151 ps
 280 s: C1= 203 ps
 140 s: C1= 347 ps
 70 s: C1= 472 ps
 35 s: C1= 645 ps
 164561 s: C2= 115 ps
 82281 s: C2= 75 ps
 41140 s: C2= 127 ps
 20570 s: C2= 141 ps
 10285 s: C2= 128 ps
 5143 s: C2= 138 ps
 2571 s: C2= 147 ps
 1286 s: C2= 196 ps
 643 s: C2= 245 ps
 321 s: C2= 337 ps
 161 s: C2= 554 ps
 80 s: C2= 793 ps



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144684 s: P1= 78 ps
 72342 s: P1= 68 ps
 36171 s: P1= 96 ps
 18085 s: P1= 101 ps
 9043 s: P1= 70 ps
 4521 s: P1= 83 ps
 2261 s: P1= 100 ps
 1130 s: P1= 120 ps
 565 s: P1= 160 ps
 283 s: P1= 211 ps
 141 s: P1= 350 ps
 71 s: P1= 481 ps
 35 s: P1= 662 ps
 144742 s: P2= 83 ps
 72371 s: P2= 60 ps
 36185 s: P2= 105 ps
 18093 s: P2= 90 ps
 9046 s: P2= 101 ps
 4523 s: P2= 113 ps
 2262 s: P2= 153 ps
 1131 s: P2= 207 ps
 565 s: P2= 284 ps
 283 s: P2= 385 ps
 141 s: P2= 578 ps
 71 s: P2= 803 ps
 35 s: P2= 1120 ps



BP1C-RO_7

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 195192
 Computed code bias (P1/P2)/m = 3.984 5.911
 Computed baseline (X,Y,Z)/m = -1.749 -9.503 -0.680
 RMS of residuals /m = 0.376

Number of phase differences to fit baseline = 192591
 A priori baseline (X,Y,Z)/m = -1.749 -9.503 -0.680
 23413 clock jitters computed out of 23445 intervals
 AVE jitter /ps = 0.2 RMS jitter /ps = 5.9

Iter 1 Large residuals L1= 54
 Iter 1 Large residuals L2= 56
 Computed baseline L1 (X,Y,Z)/m = -0.090 -0.008 -0.101
 RMS of residuals L1 /m = 0.002
 Computed baseline L2 (X,Y,Z)/m = -0.096 -0.006 -0.110
 RMS of residuals L2 /m = 0.004

Iter 2 Large residuals L1= 54
 Iter 2 Large residuals L2= 56
 Computed baseline L1 (X,Y,Z)/m = -0.090 -0.008 -0.101
 RMS of residuals L1 /m = 0.002
 Computed baseline L2 (X,Y,Z)/m = -0.096 -0.006 -0.110
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -1.839 -9.511 -0.781
 Final baseline L2 (X,Y,Z)/m = -1.845 -9.509 -0.790

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 196720

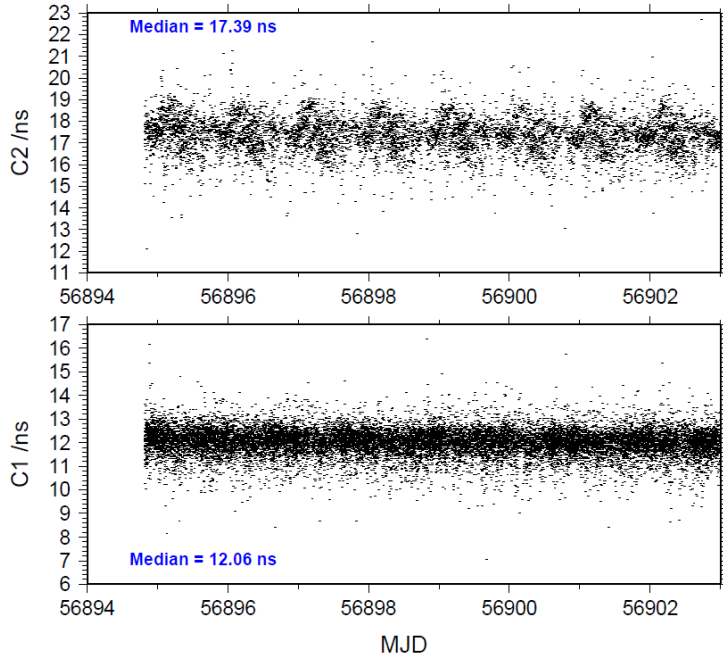
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 196399 12.018 1.105
 C2: 81829 17.373 1.511
 P1: 195055 13.537 1.151
 P2: 195009 19.990 1.510

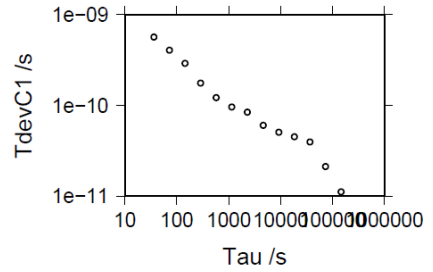
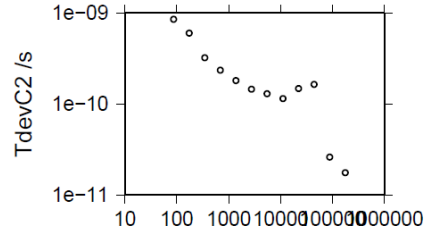
Number of 300s epochs in out file = 2358

Code #pts, median/ns, ave/ns, rms/ns
 C1: 19621 12.065 12.022 0.570
 C2: 8177 17.391 17.367 0.826
 P1: 19487 13.598 13.544 0.634
 P2: 19483 20.037 19.990 1.026

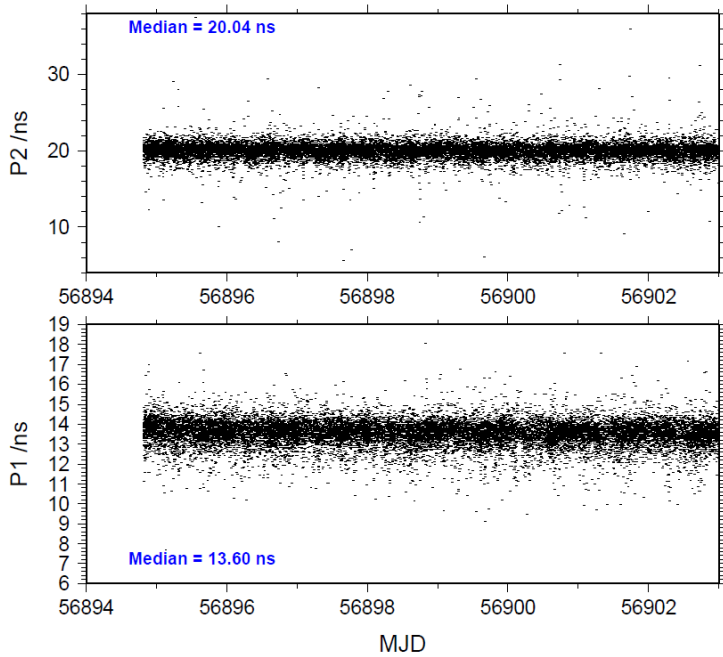
03/20/15 bp1cro_714237_9



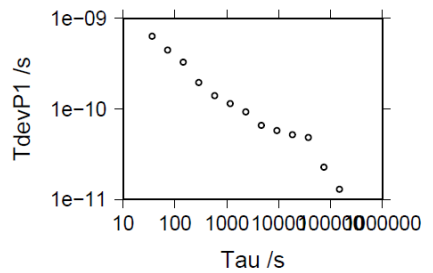
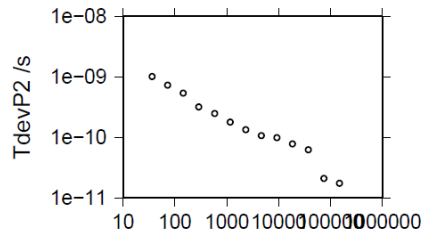
- 147619 s: C1= 11 ps
- 73809 s: C1= 21 ps
- 36905 s: C1= 40 ps
- 18452 s: C1= 45 ps
- 9226 s: C1= 51 ps
- 4613 s: C1= 60 ps
- 2307 s: C1= 84 ps
- 1153 s: C1= 96 ps
- 577 s: C1= 122 ps
- 288 s: C1= 176 ps
- 144 s: C1= 291 ps
- 72 s: C1= 406 ps
- 36 s: C1= 568 ps
- 177121 s: C2= 18 ps
- 88560 s: C2= 26 ps
- 44280 s: C2= 164 ps
- 22140 s: C2= 148 ps
- 11070 s: C2= 114 ps
- 5535 s: C2= 130 ps
- 2768 s: C2= 146 ps
- 1384 s: C2= 181 ps
- 692 s: C2= 235 ps
- 346 s: C2= 323 ps
- 173 s: C2= 599 ps
- 86 s: C2= 854 ps



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- 148634 s: P1= 13 ps
- 74317 s: P1= 23 ps
- 37158 s: P1= 49 ps
- 18579 s: P1= 52 ps
- 9290 s: P1= 58 ps
- 4645 s: P1= 66 ps
- 2322 s: P1= 93 ps
- 1161 s: P1= 114 ps
- 581 s: P1= 141 ps
- 290 s: P1= 195 ps
- 145 s: P1= 327 ps
- 73 s: P1= 445 ps
- 36 s: P1= 633 ps
- 148664 s: P2= 17 ps
- 74332 s: P2= 21 ps
- 37166 s: P2= 63 ps
- 18583 s: P2= 78 ps
- 9292 s: P2= 99 ps
- 4646 s: P2= 106 ps
- 2323 s: P2= 134 ps
- 1161 s: P2= 177 ps
- 581 s: P2= 247 ps
- 290 s: P2= 318 ps
- 145 s: P2= 540 ps
- 73 s: P2= 730 ps
- 36 s: P2= 1017 ps



2.14/ BIPM (14255)Period

MJD 56912 to 56916

Delays

All measurements at BIPM carried out by L. Tisserand.

Equipment used to measure internal delay of local receiver is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 4680, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

Equipment used to measure internal delay of traveling receivers is a time interval counter (TIC), model SR620, maker Stanford Research Systems, s/n: 5482, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

BP0R:

$$\begin{aligned} X_O &= 227.6 \text{ ns} && (267.6-48.7+8.7) \\ X_P &= 42.7 \text{ ns} && (BP1R+C139+BP1S+C72) \\ \text{REFDLY} &= 270.3 \text{ ns} \\ \text{CABDLY} = X_C &= 133.4 \text{ ns} && (C113) \end{aligned}$$

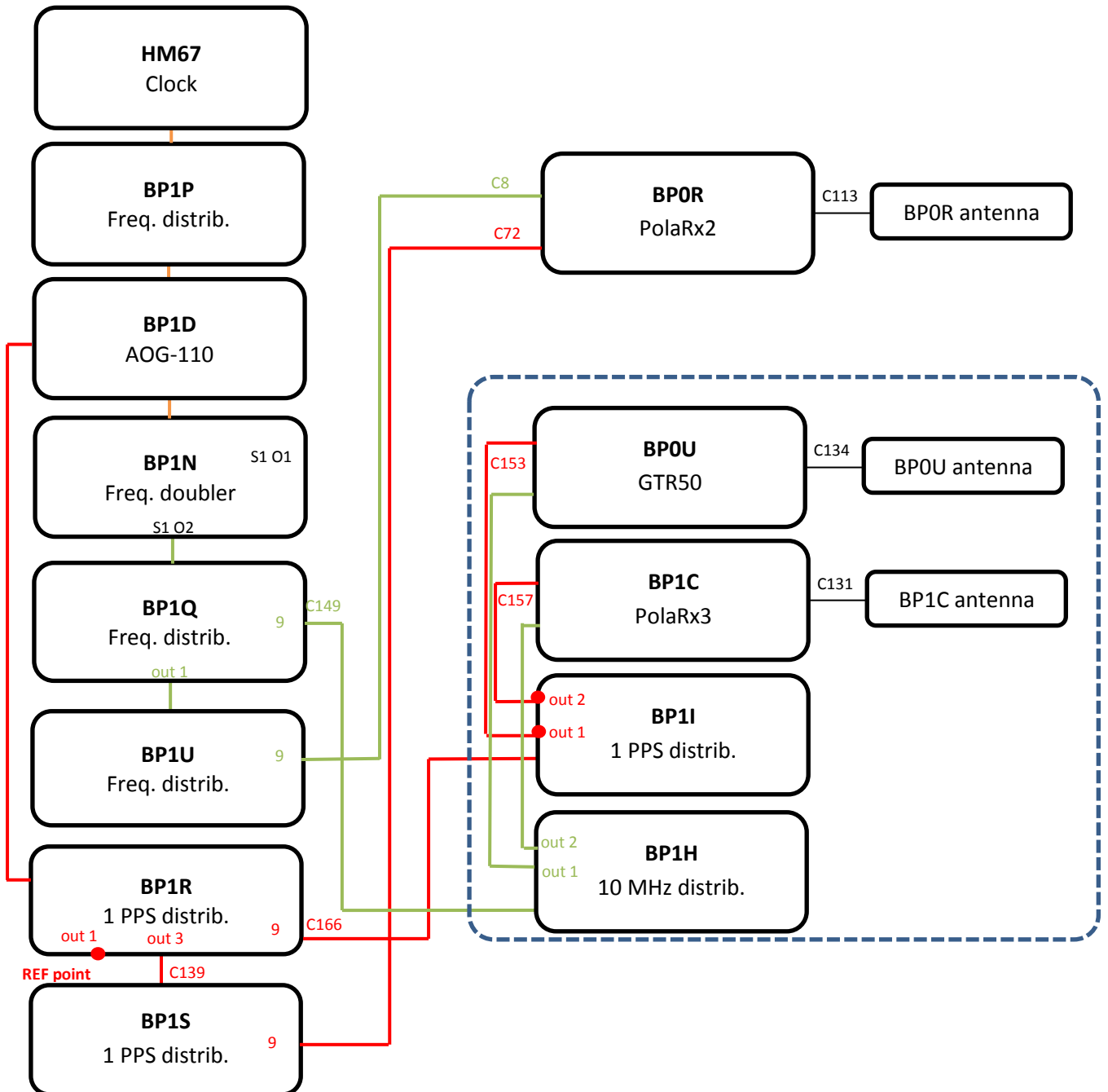
BP0U:

$$\begin{aligned} \text{REFDLY} = X_P &= 52.6 \text{ ns} && (BP1R+C166+BP1I+C153) \\ \text{CABDLY} = X_C &= 182.0 \text{ ns} && (C134) \end{aligned}$$

BP1C:

$$\begin{aligned} X_O &= 205.3 \text{ ns} && (220.6-15.3) \\ X_P &= 52.6 \text{ ns} && (BP1R+C166+BP1I+C157) \\ \text{REFDLY} &= 257.9 \text{ ns} \\ \text{CABDLY} = X_C &= 235.7 \text{ ns} && (C131) \end{aligned}$$

Setup at the BIPM



BP0U-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 44275
 Computed code bias (P1/P2)/m = -27.780 -26.747
 Computed baseline (X,Y,Z)/m = -5.279 -0.765 4.339
 RMS of residuals /m = 0.670

Number of phase differences to fit baseline = 39789
 A priori baseline (X,Y,Z)/m = -5.279 -0.765 4.339
 8767 clock jitters computed out of 8835 intervals
 AVE jitter /ps = -0.4 RMS jitter /ps = 37.1

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 0
 Computed baseline L1 (X,Y,Z)/m = 0.112 0.027 0.153
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = 0.128 0.025 0.167
 RMS of residuals L2 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -5.166 -0.738 4.491
 Final baseline L2 (X,Y,Z)/m = -5.151 -0.740 4.506

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 44390

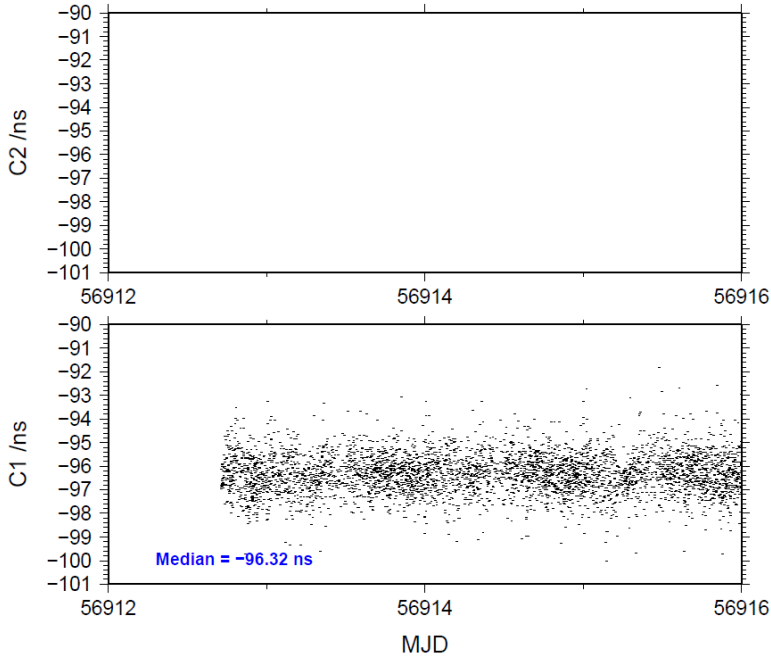
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 44345 -96.322 1.474
 C2: 0-NaN -NaN
 P1: 44229 -93.139 2.302
 P2: 44229 -89.740 2.539

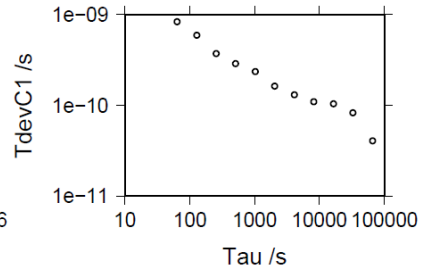
Number of 300s epochs in out file = 947

Code #pts, median/ns, ave/ns, rms/ns
 C1: 4440 -96.321 -96.324 0.833
 C2: 0 0.000-NaN -NaN
 P1: 4433 -93.200 -93.179 1.171
 P2: 4433 -89.716 -89.718 1.429

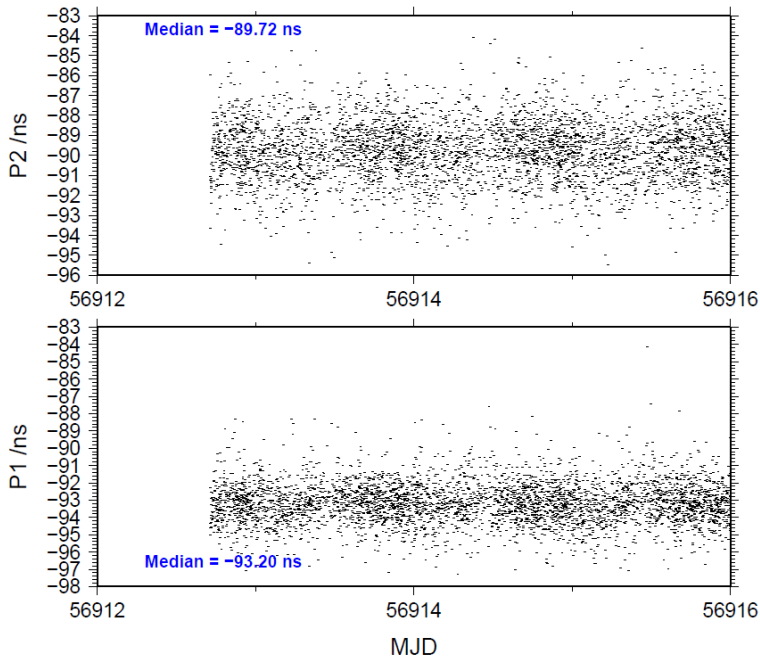
03/20/15 bp0ubp0r14255_4



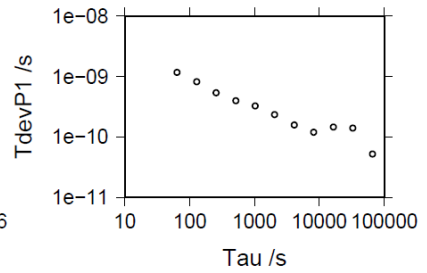
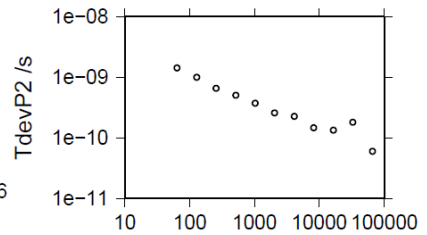
- 65468 s: C1= 41 ps
- 32734 s: C1= 83 ps
- 16367 s: C1= 104 ps
- 8183 s: C1= 110 ps
- 4092 s: C1= 130 ps
- 2046 s: C1= 162 ps
- 1023 s: C1= 234 ps
- 511 s: C1= 287 ps
- 256 s: C1= 371 ps
- 128 s: C1= 588 ps
- 64 s: C1= 829 ps



03/20/15 bp0ubp0r14255_4



- 65571 s: P1= 53 ps 65571 s: P2= 60 ps
- 32786 s: P1= 142 ps 32786 s: P2= 181 ps
- 16393 s: P1= 146 ps 16393 s: P2= 133 ps
- 8196 s: P1= 121 ps 8196 s: P2= 146 ps
- 4098 s: P1= 158 ps 4098 s: P2= 226 ps
- 2049 s: P1= 236 ps 2049 s: P2= 258 ps
- 1025 s: P1= 326 ps 1025 s: P2= 371 ps
- 512 s: P1= 397 ps 512 s: P2= 506 ps
- 256 s: P1= 541 ps 256 s: P2= 660 ps
- 128 s: P1= 824 ps 128 s: P2= 1005 ps
- 64 s: P1= 1170 ps 64 s: P2= 1434 ps



BP1C-BP0R

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 60154
 Computed code bias (P1/P2)/m = -16.329 -15.678
 Computed baseline (X,Y,Z)/m = -4.432 -0.728 3.839
 RMS of residuals /m = 0.637

Number of phase differences to fit baseline = 59141
 A priori baseline (X,Y,Z)/m = -4.432 -0.728 3.839
 9485 clock jitters computed out of 9485 intervals
 AVE jitter /ps = 0.3 RMS jitter /ps = 5.6

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 3
 Computed baseline L1 (X,Y,Z)/m = -0.020 0.023 -0.020
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.025 0.031 -0.019
 RMS of residuals L2 /m = 0.005

Iter 2 Large residuals L1= 0
 Iter 2 Large residuals L2= 3
 Computed baseline L1 (X,Y,Z)/m = -0.020 0.023 -0.020
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.025 0.031 -0.019
 RMS of residuals L2 /m = 0.005

Final baseline L1 (X,Y,Z)/m = -4.452 -0.704 3.820
 Final baseline L2 (X,Y,Z)/m = -4.458 -0.697 3.820

COMPUTATION OF CODE DIFFERENCES

Number of code differences = 61848

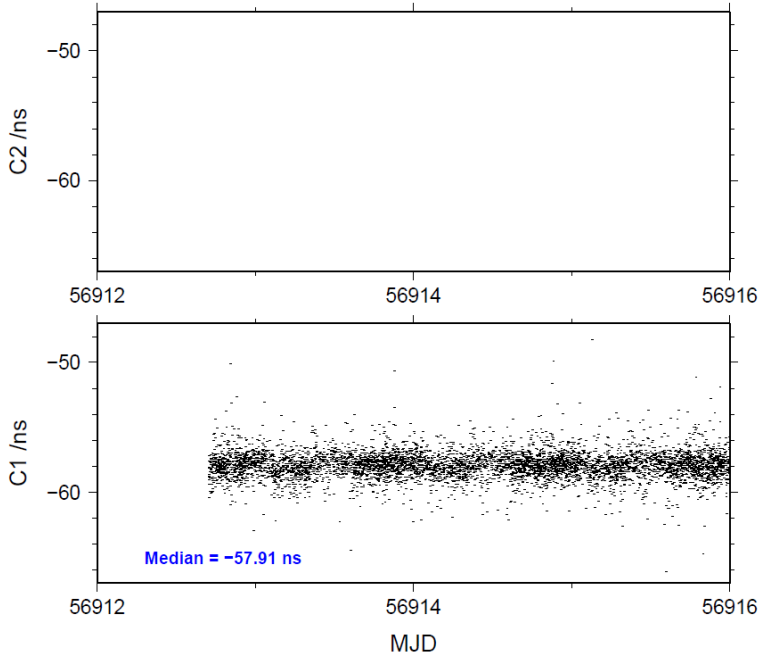
Global average of individual differences

Code #pts, ave/ns, rms/ns
 C1: 61668 -57.900 1.868
 C2: 0-NaN -NaN
 P1: 60111 -54.410 2.295
 P2: 60071 -52.234 2.652

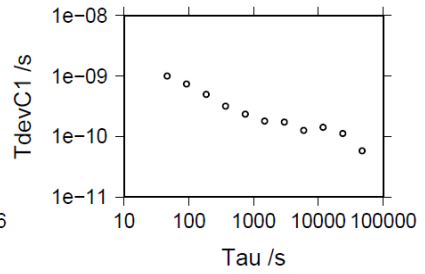
Number of 300s epochs in out file = 949

Code #pts, median/ns, ave/ns, rms/ns
 C1: 6134 -57.907 -57.908 1.018
 C2: 0 0.000-NaN -NaN
 P1: 6005 -54.455 -54.438 1.226
 P2: 5999 -52.223 -52.243 1.546

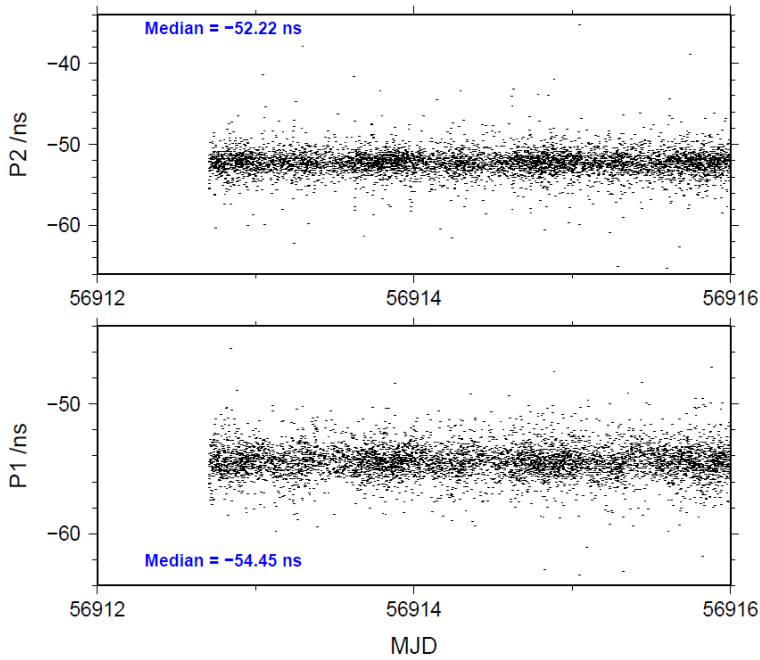
03/20/15 bp1cbp0r14255_4



- 47485 s: C1= 58 ps
- 23743 s: C1= 112 ps
- 11871 s: C1= 143 ps
- 5936 s: C1= 127 ps
- 2968 s: C1= 174 ps
- 1484 s: C1= 180 ps
- 742 s: C1= 235 ps
- 371 s: C1= 319 ps
- 185 s: C1= 495 ps
- 93 s: C1= 736 ps
- 46 s: C1= 1005 ps



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- 48505 s: P1= 33 ps
- 24253 s: P1= 94 ps
- 12126 s: P1= 146 ps
- 6063 s: P1= 116 ps
- 3032 s: P1= 187 ps
- 1516 s: P1= 220 ps
- 758 s: P1= 299 ps
- 379 s: P1= 408 ps
- 189 s: P1= 611 ps
- 95 s: P1= 863 ps
- 47 s: P1= 1227 ps
- 48554 s: P2= 46 ps
- 24277 s: P2= 52 ps
- 12138 s: P2= 82 ps
- 6069 s: P2= 132 ps
- 3035 s: P2= 221 ps
- 1517 s: P2= 267 ps
- 759 s: P2= 405 ps
- 379 s: P2= 524 ps
- 190 s: P2= 759 ps
- 95 s: P2= 1100 ps
- 47 s: P2= 1553 ps

