

Recent Timing Diagnostic Results

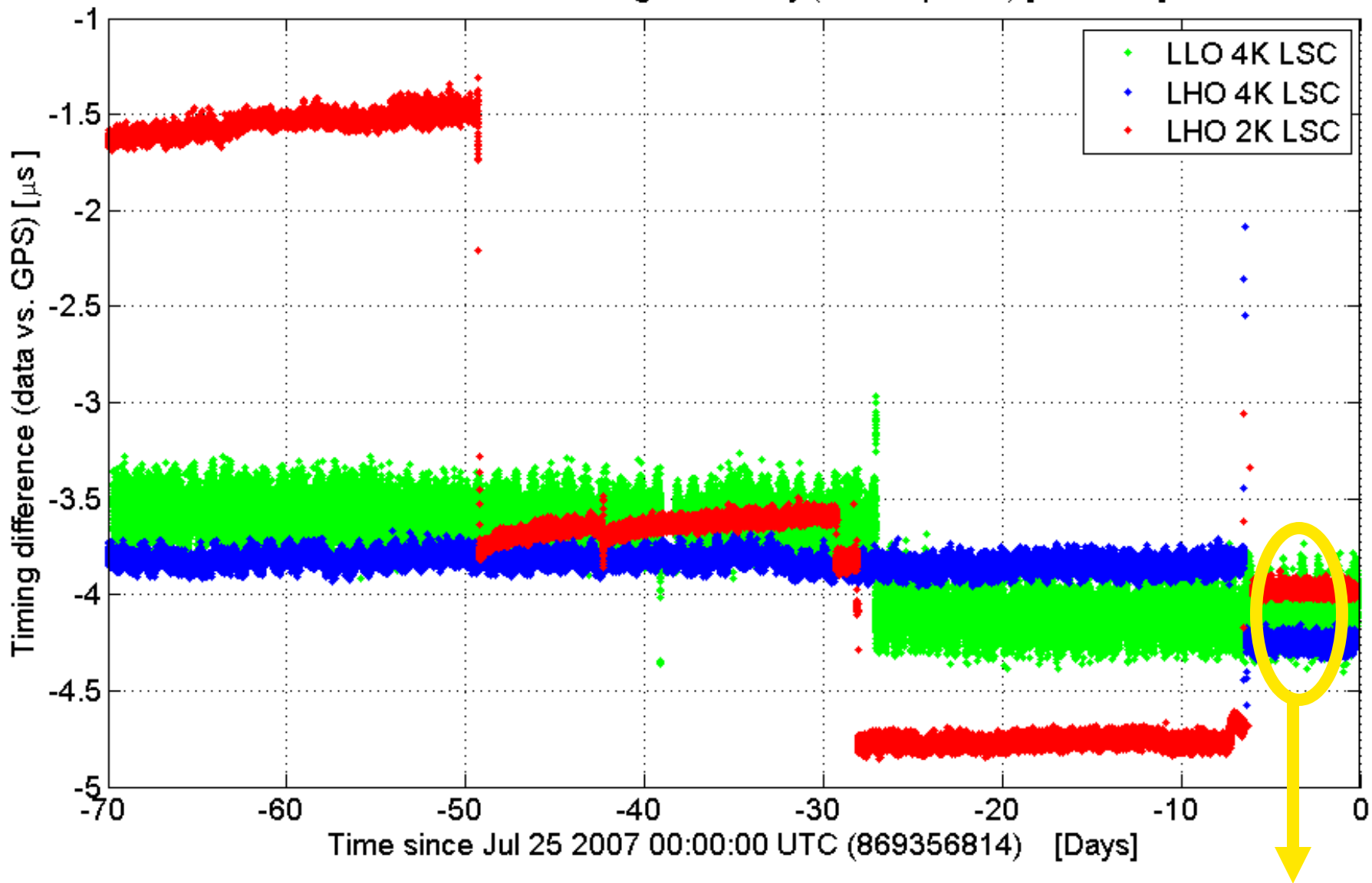
Rubab Khan¹, Luca Matone¹,
Szabi Marka¹, Daniel Sigg²

¹Columbia University, GECO

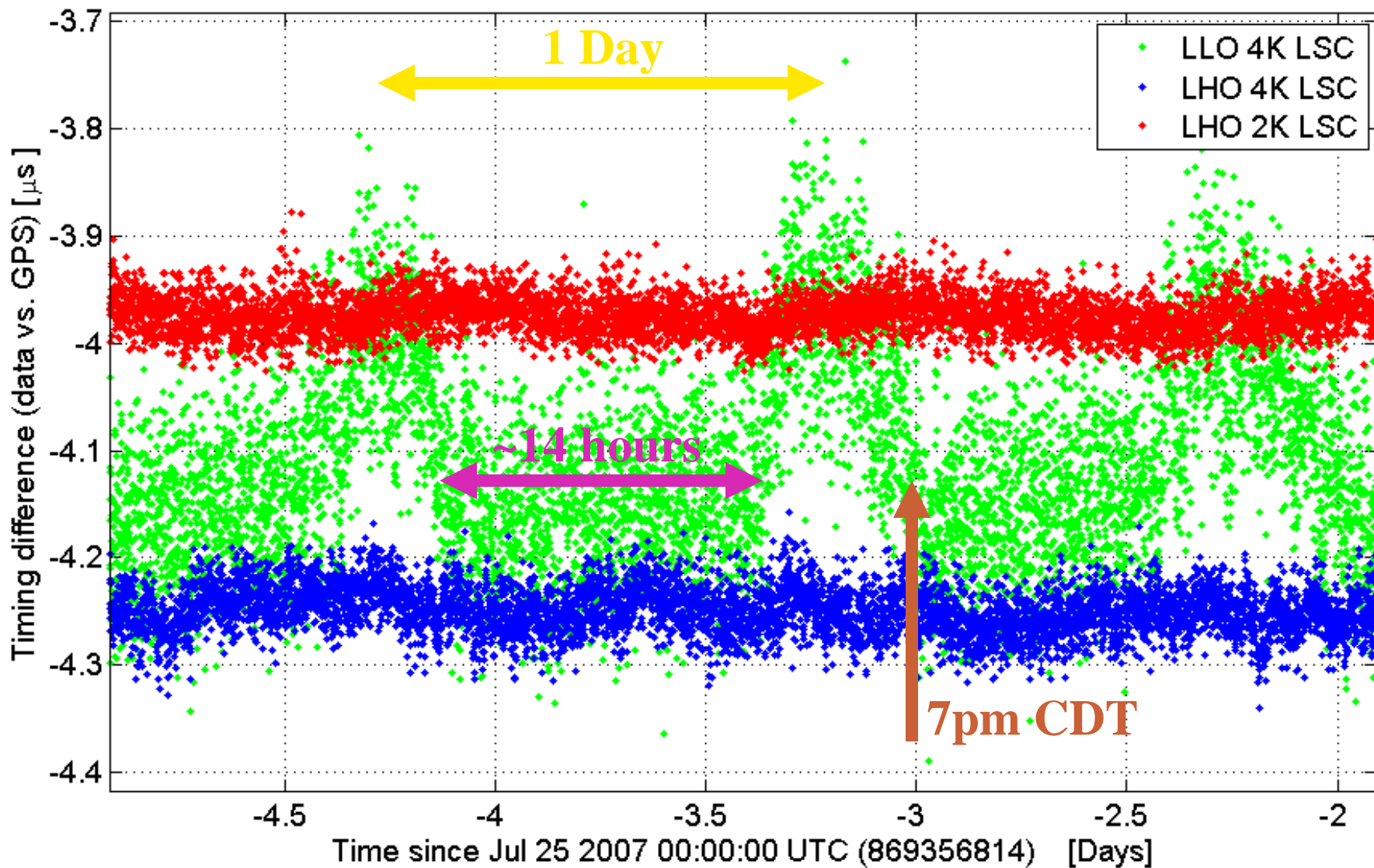
²LIGO Hanford Observatory

LIGO-G070551-00-D

Minute trend of LSC timing uncertainty (S5 sub period) [DuoTone]



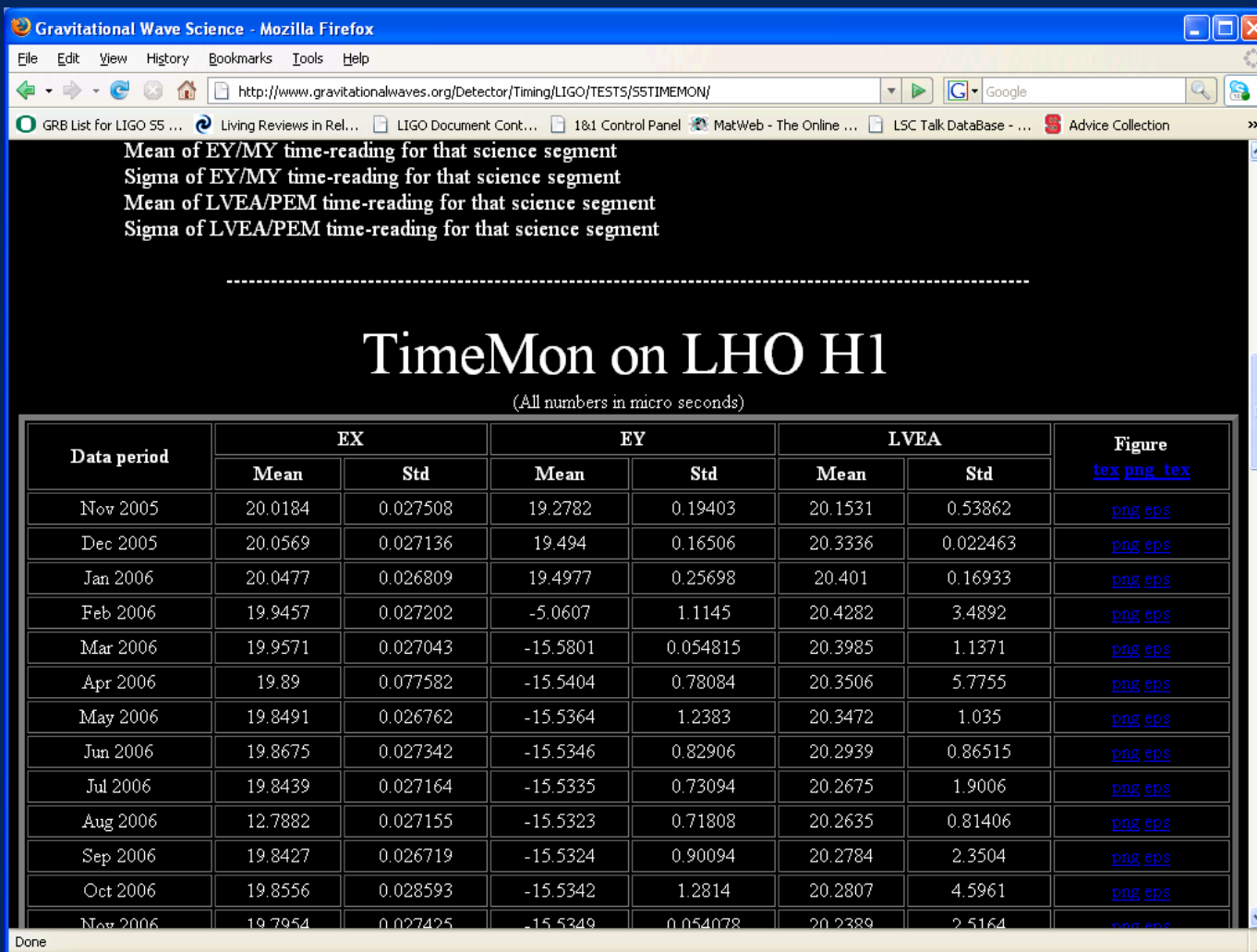
Minute trend of LSC timing uncertainty (S5 sub period) [DuoTone]



Detailed results are available from:

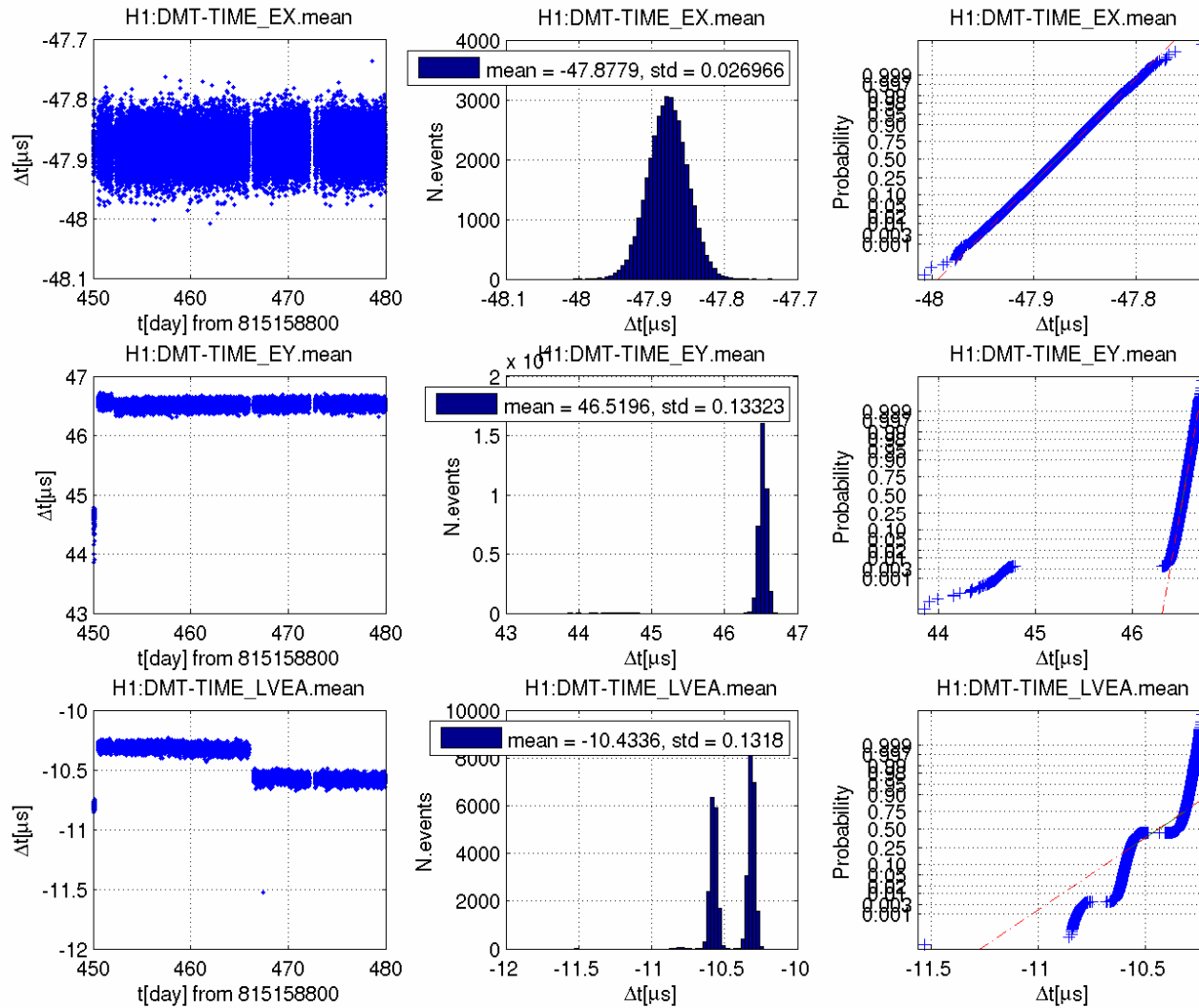
<http://www.gravitationalwaves.org/Detector/Timing/LIGO/TESTS/S5TIMEMON/>

first 20 months of S5



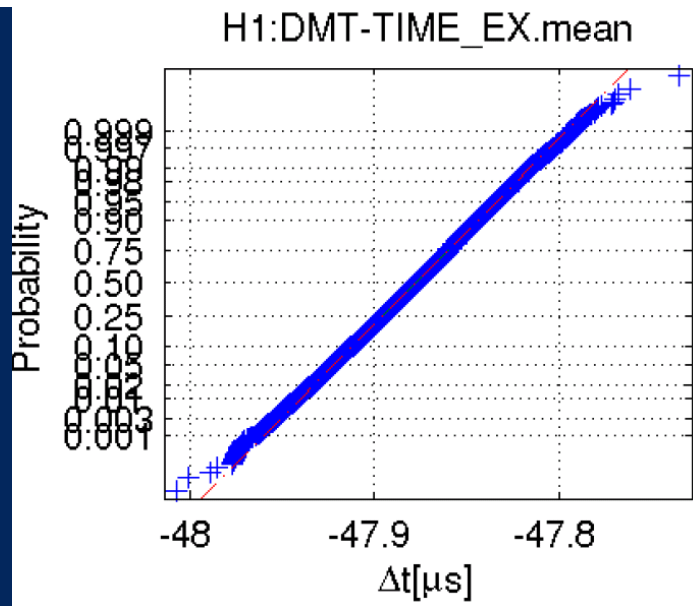
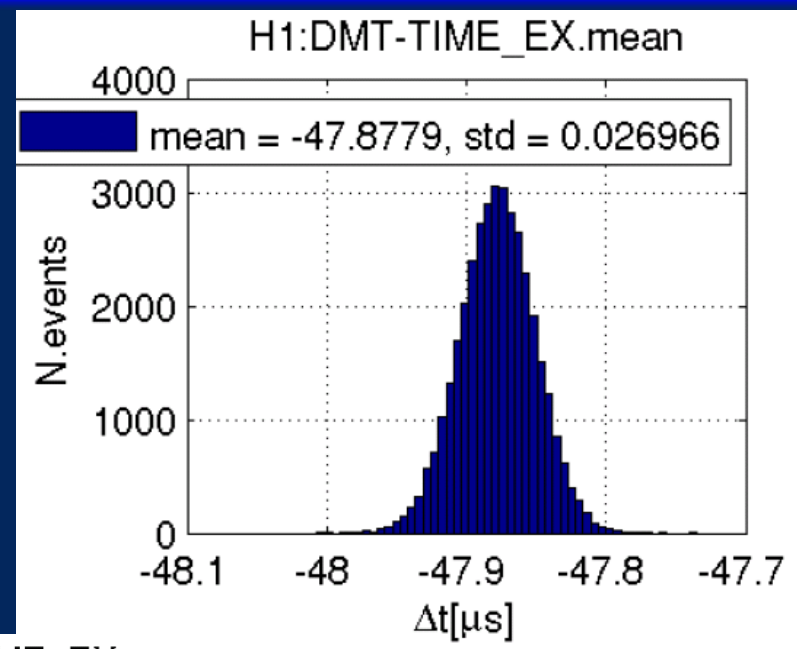
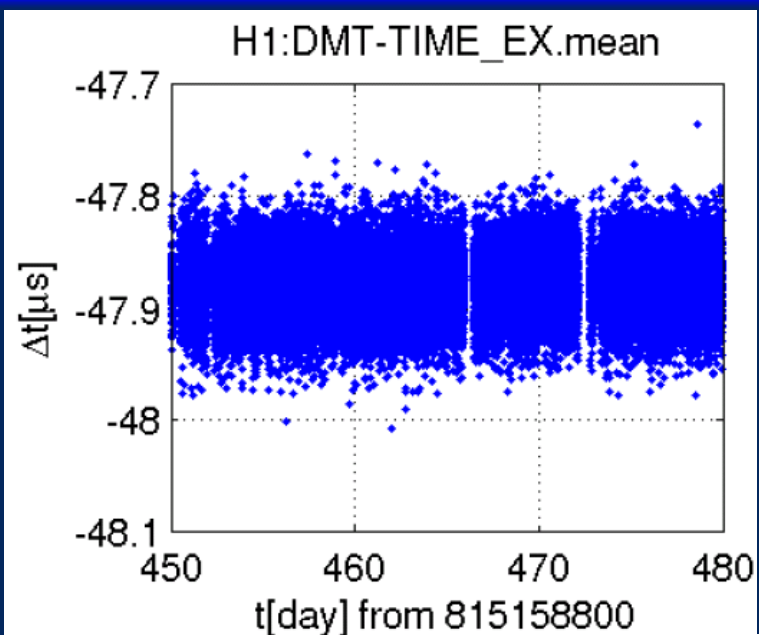
Per Science segments results are available for H1, H2, L1 at
http://www.gravitationalwaves.org/Detector/Timing/LIGO/TESTS/S5TIMEMON/segment_timing/

Example: Auxiliary Timing Channels



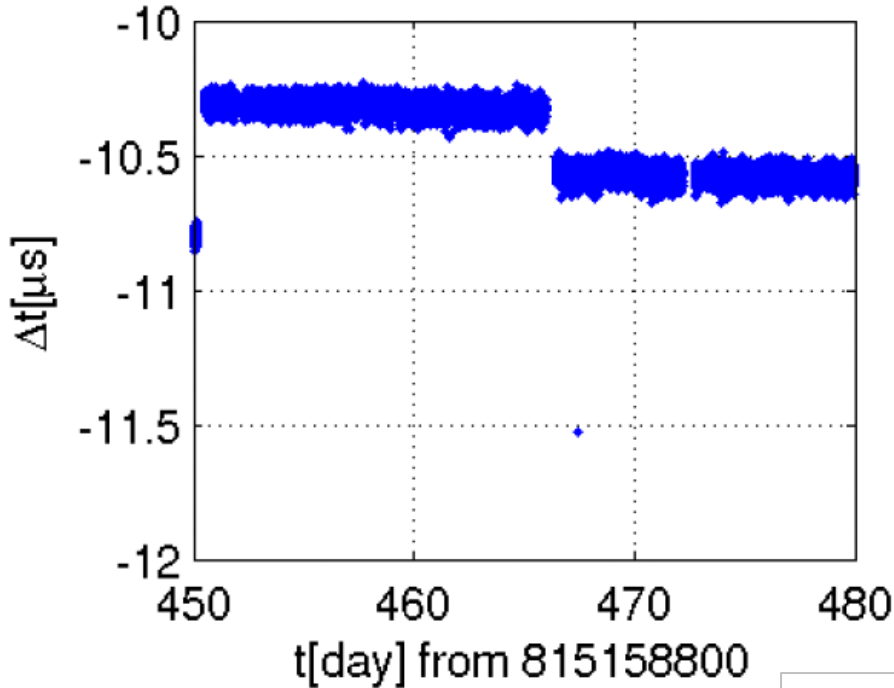
H1 (Feb 2007) EX, EY, LVEA PEM timing

Example: Auxiliary Timing Channels

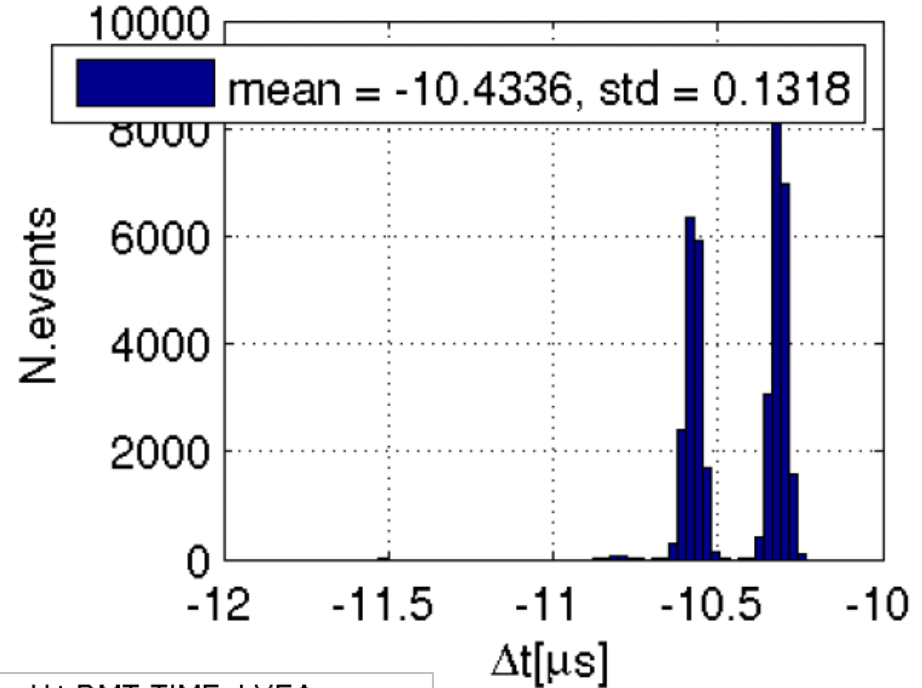


H1 (Feb 2007) EX, EY, LVEA PEM timing

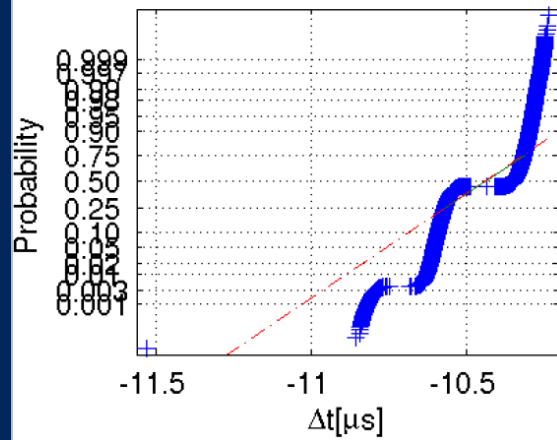
H1:DMT-TIME_LVEA.mean



H1:DMT-TIME_LVEA.mean



H1:DMT-TIME_LVEA.mean



H1 (Feb 2007) EX, EY, LVEA PEM timing

Detailed results are available from:

<http://www.gravitationalwaves.org/Detector/Timing/LIGO/TESTS/S5ATOMIC/Atomic.html>

first 18 months of S5

Gravitational Wave Science - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.gravitationalwaves.org/Detector/Timing/LIGO/TESTS/S5ATOMIC/Atomic.html

Google

GRB List for LIGO S5 ... Living Reviews in Rel... LIGO Document Cont... 1&1 Control Panel MatWeb - The Online ... LSC Talk DataBase - ... Advice Collection

Minute trend of H0:TIM-MSR_SYVAT_TIME_DIFF

Data period	Linear trend	STD	Avg. MAX-MIN	Comments	Figure
Nov - Dec 2005	1.18 ns/day	38 ns	3.3 ns		png
Jan - Feb 2006			3 ns	two linear trends	png
Mar - Apr 2006	1.83 ns/day	7.5 ns	1.7 ns		png
May - Jun 2006	2.37 ns/day	14 ns	1.4 ns		png
Jul - Aug 2006	2.88 ns/day	15 ns	1.8 ns		png
Sep - Oct 2006	3.09 ns/day	1.1e2 ns	3.1e2 ns		png
Nov - Dec 2006	3.32 ns/day	16 ns	2.3 ns		png
Jan - Feb 2007	2.85 ns/day	9.4 ns	2.5 ns		png
Feb - Mar 2007	3.44 ns/day	9.3 ns	2.4 ns		png

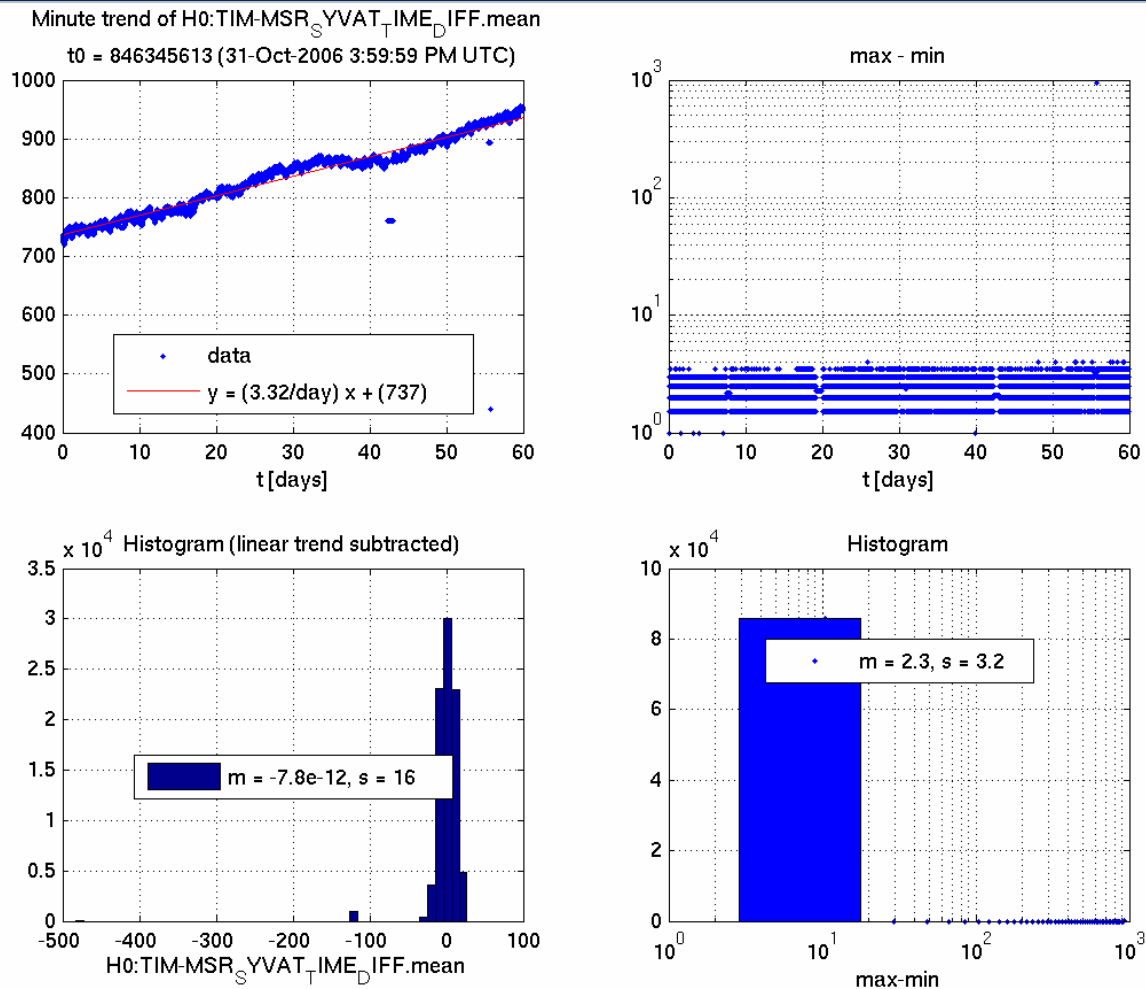
Minute trend of H0:TIM-MSR_BYVAT_TIME_DIFF

Data period	Linear trend	STD	Avg. MAX-MIN	Comments	Figure
Nov - Dec 2005	0.415 ns/day	1.3e2 ns	39 ns		png
Jan - Feb 2006			37 ns	two linear trends	png
Mar - Apr 2006	1.85 ns/day	45 ns	27 ns		png

Done

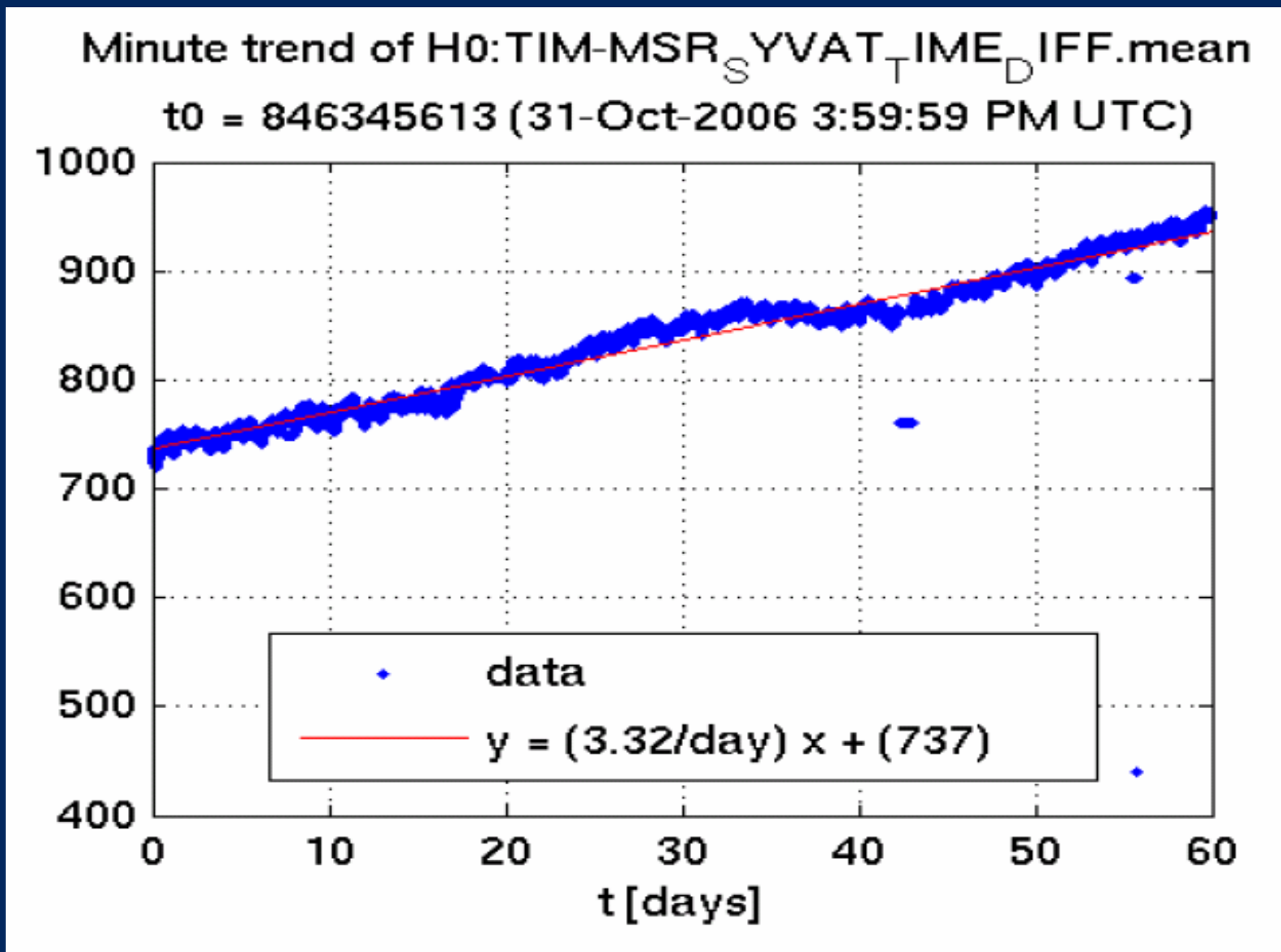
Symetricom/Agilent 58503B GPS vs. Symmetricom CsIII Caesium Clock

http://www.symmttm.com/pdf/Gps/ds_58503b.pdf

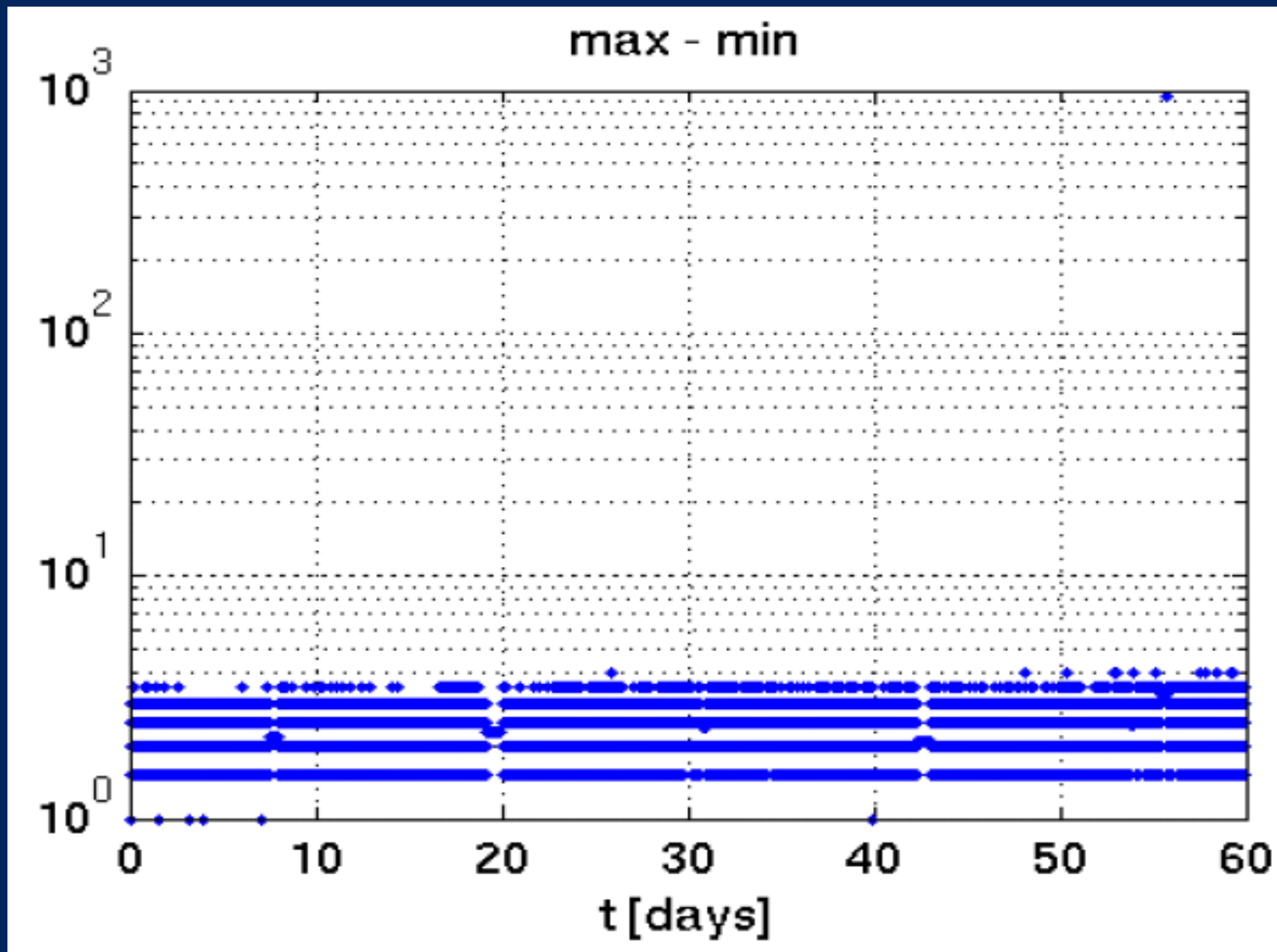


Example: Symmetricom vs. Atomic

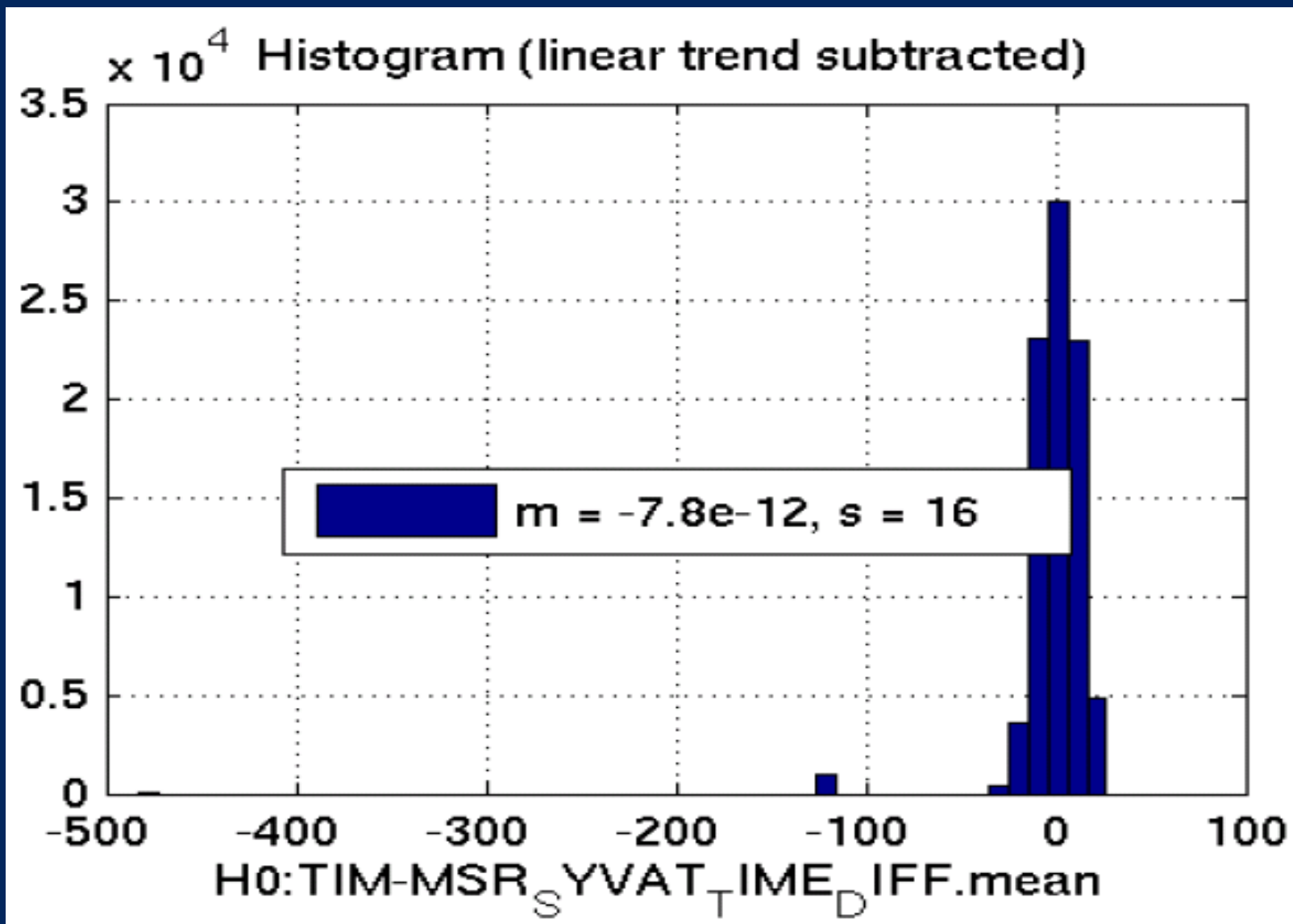
Symetricom/Agilent 58503B GPS vs. Symmetricom CsIII Caesium Clock



Symetricom/Agilent 58503B GPS vs. Symmetricom CsIII Caesium Clock



Symetricom/Agilent 58503B GPS vs. Symmetricom CsIII Caesium Clock



- LSC (DuoTone) results indicate stable timing performance
 - ToDo: cumulative database for S5 LSC timing
- Summary of timing information on auxiliary channels is available on the web
- Summary of long term timing hardware comparison information is available on the web
- Hardware parts presently studied for Advanced LIGO are promising