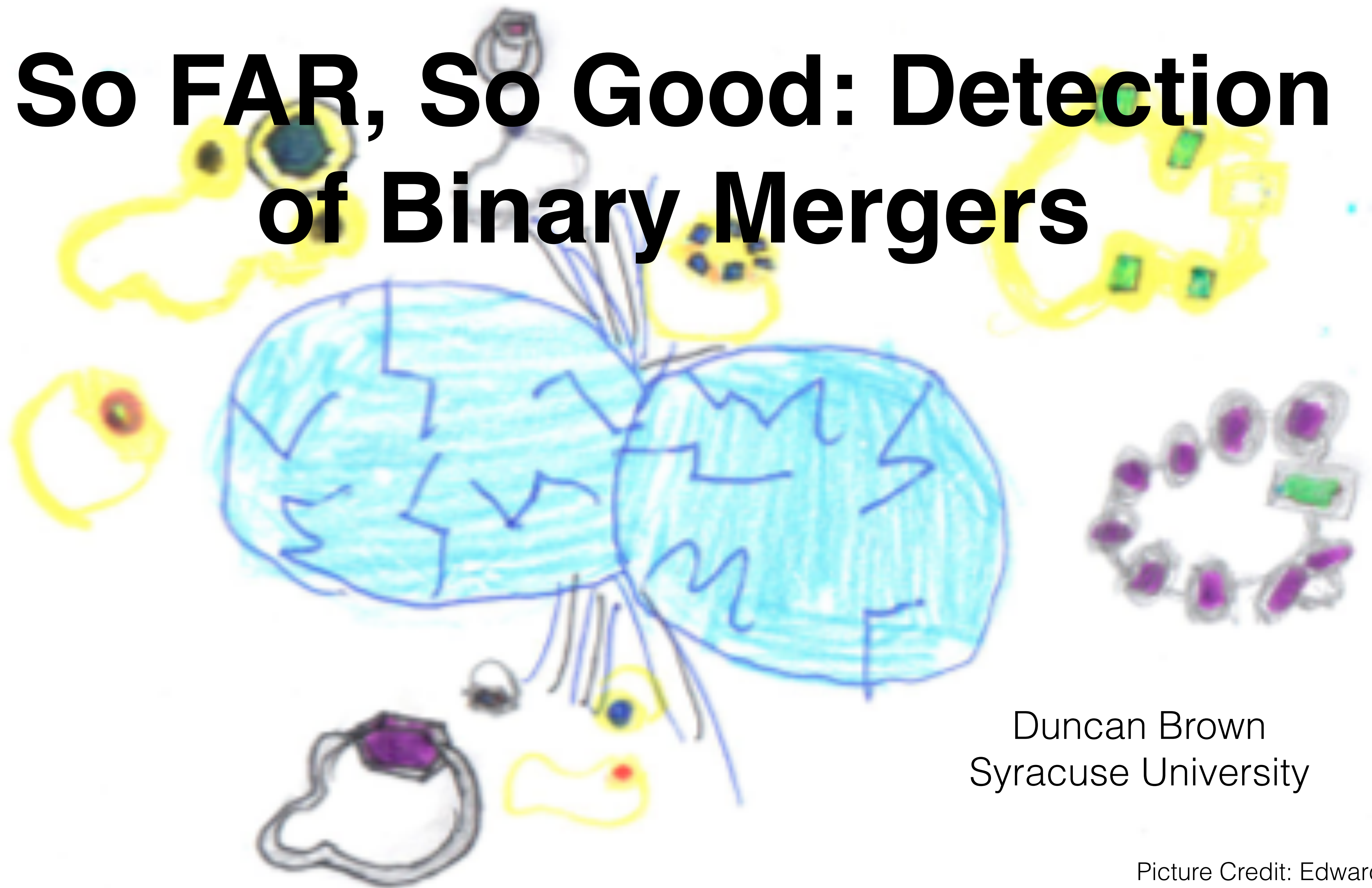


So FAR, So Good: Detection of Binary Mergers

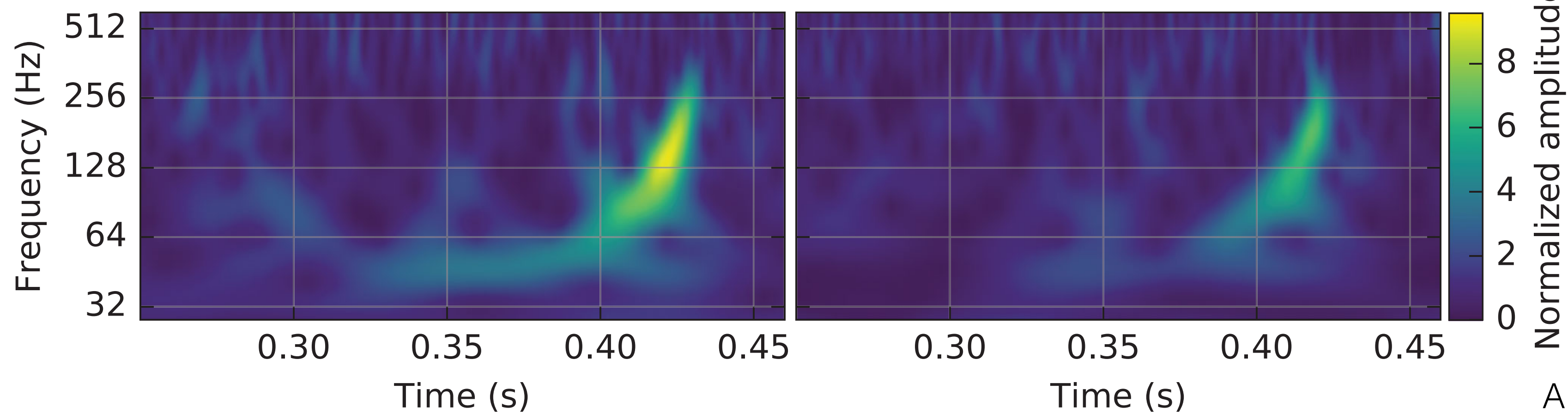
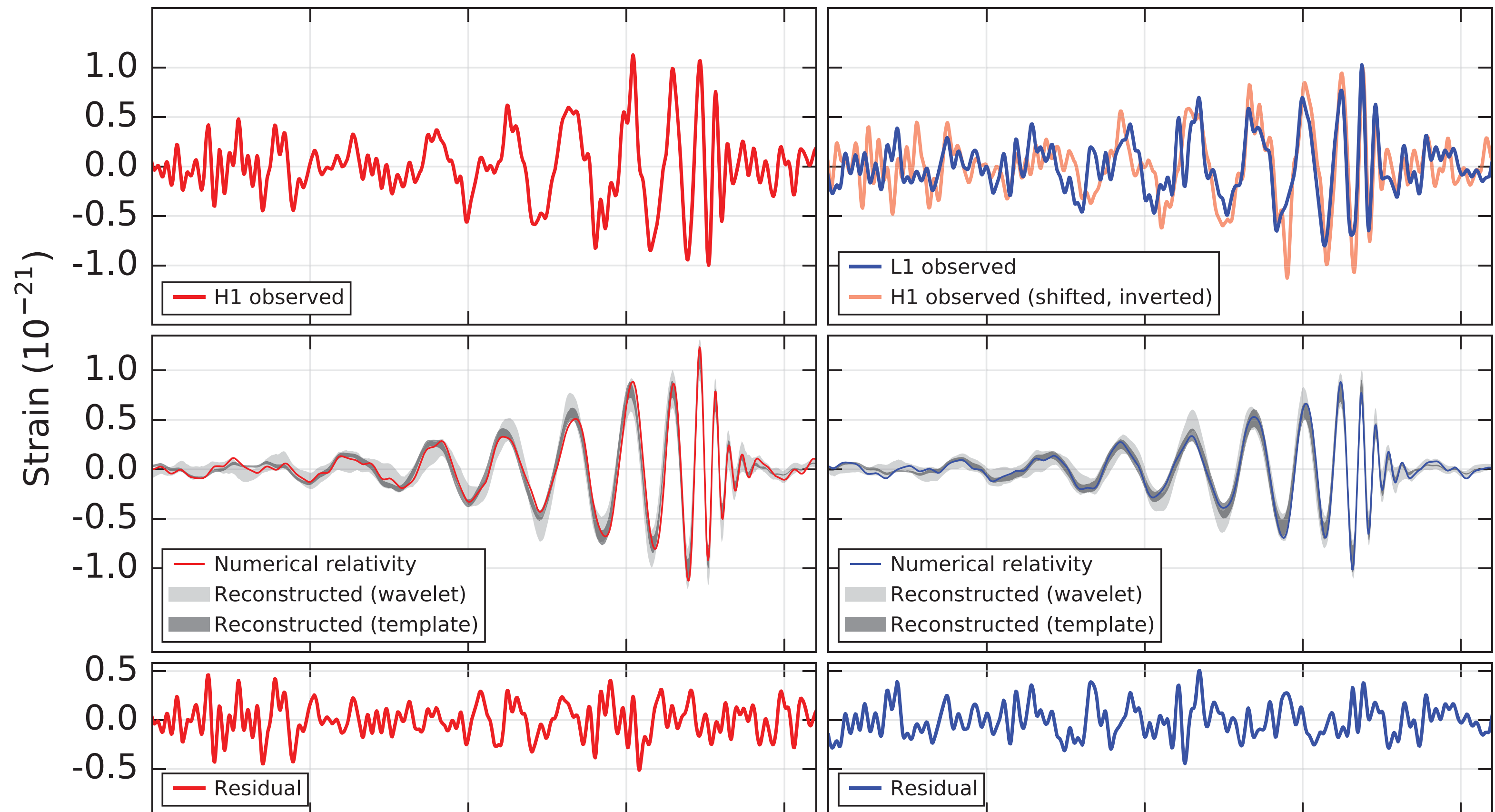


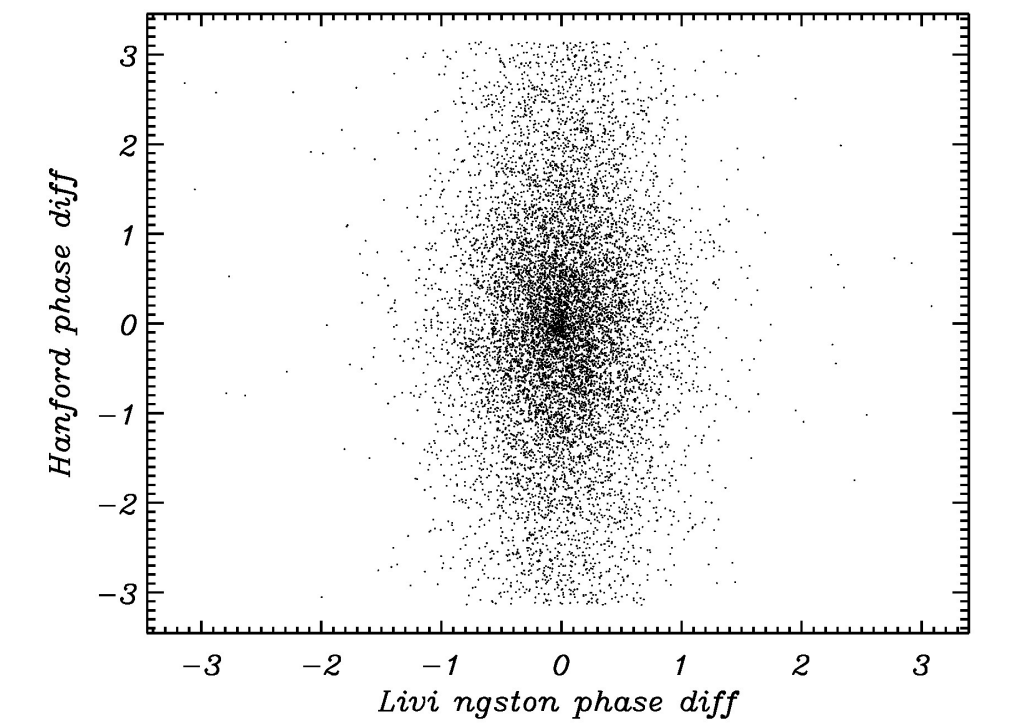
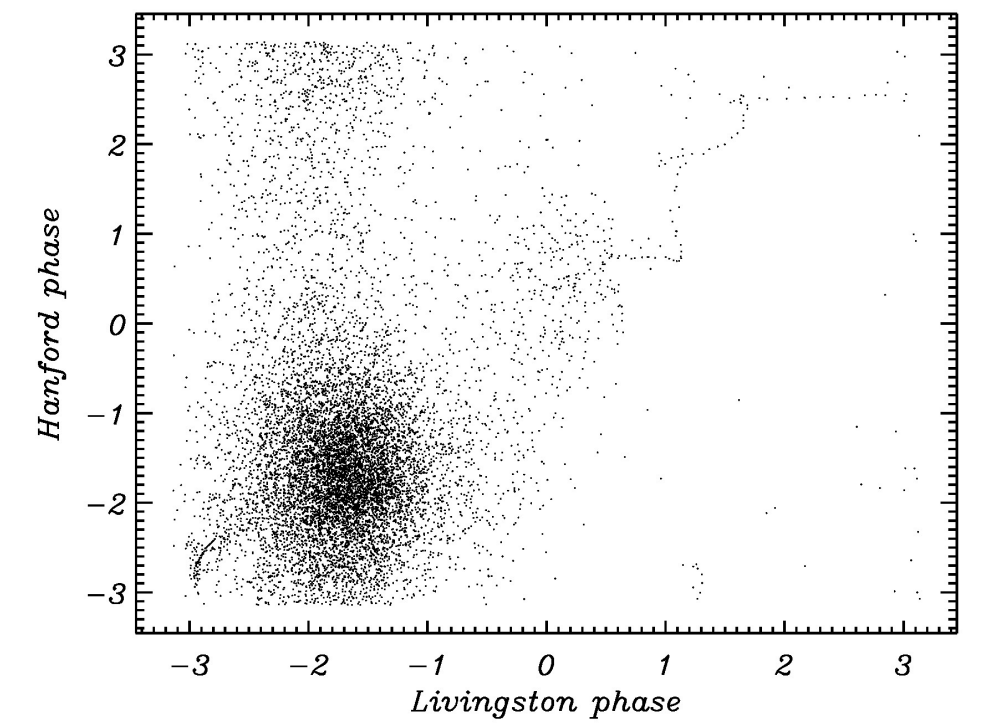
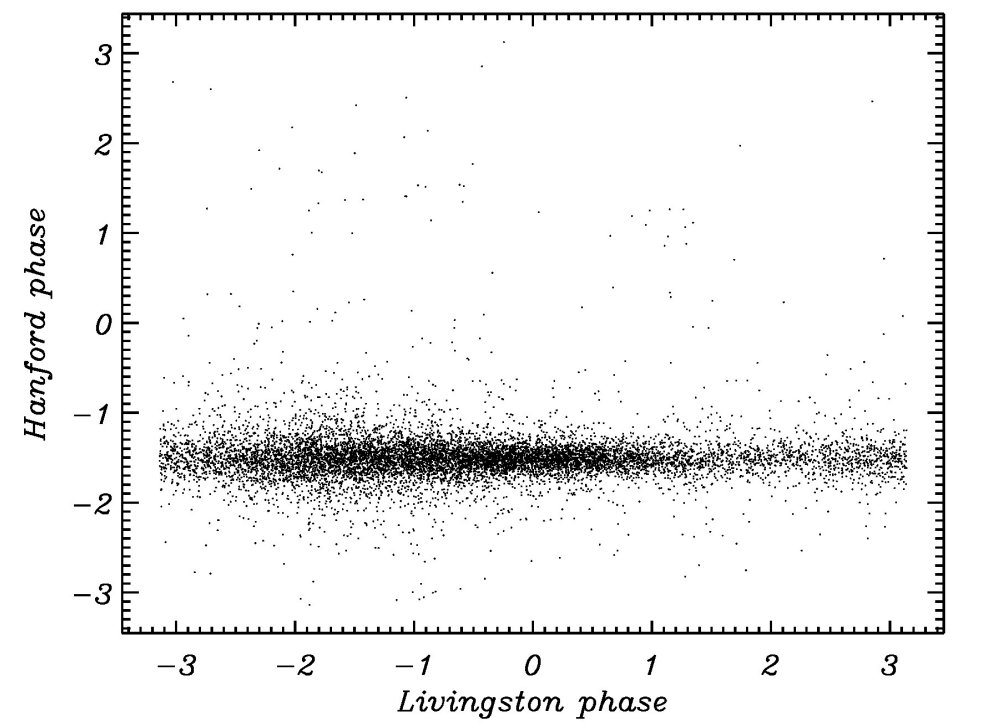
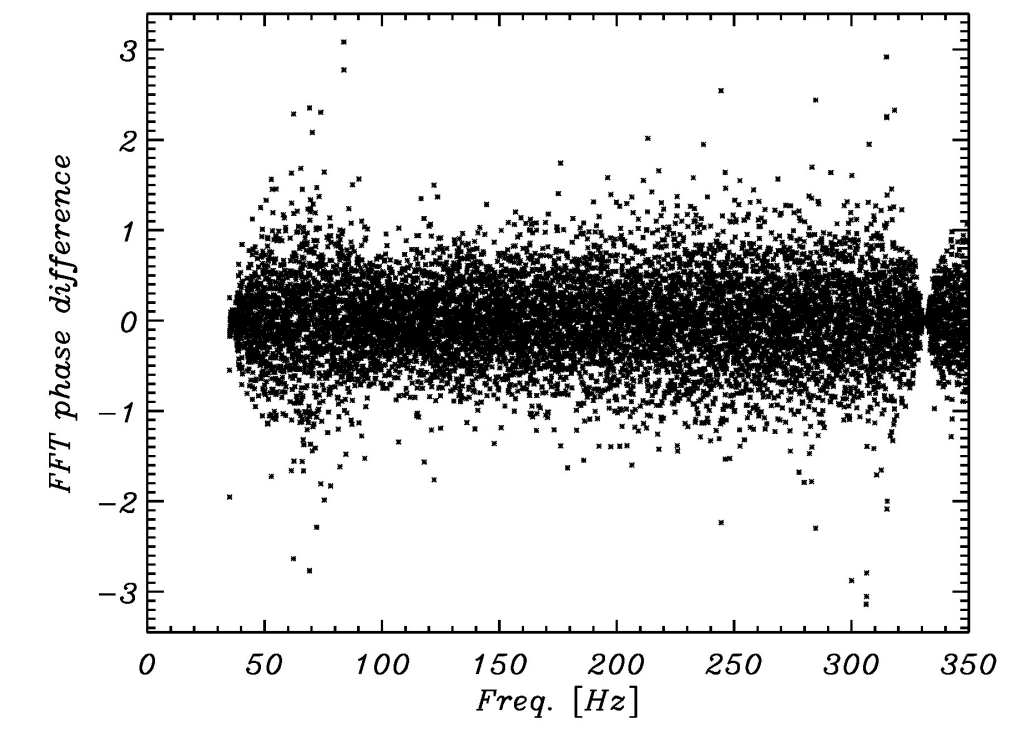
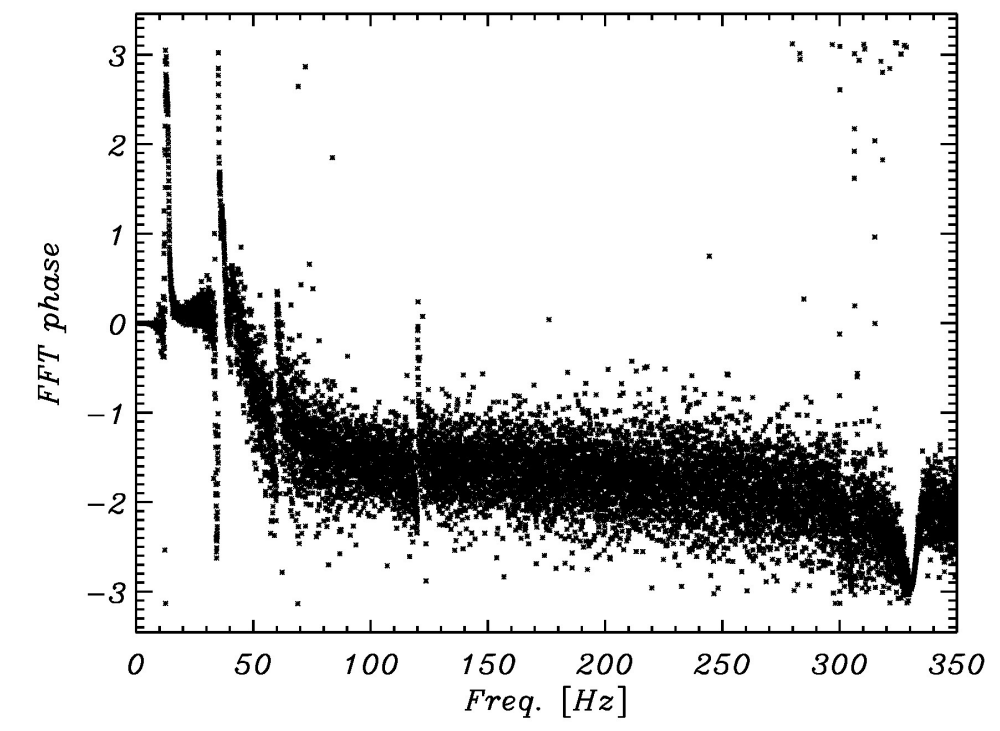
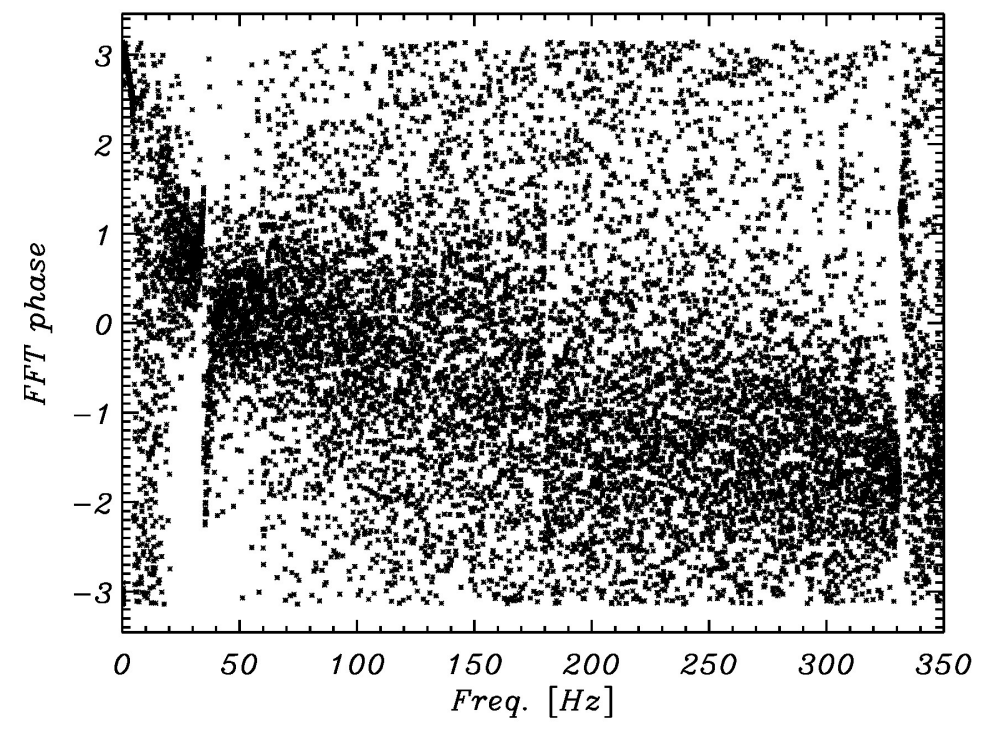
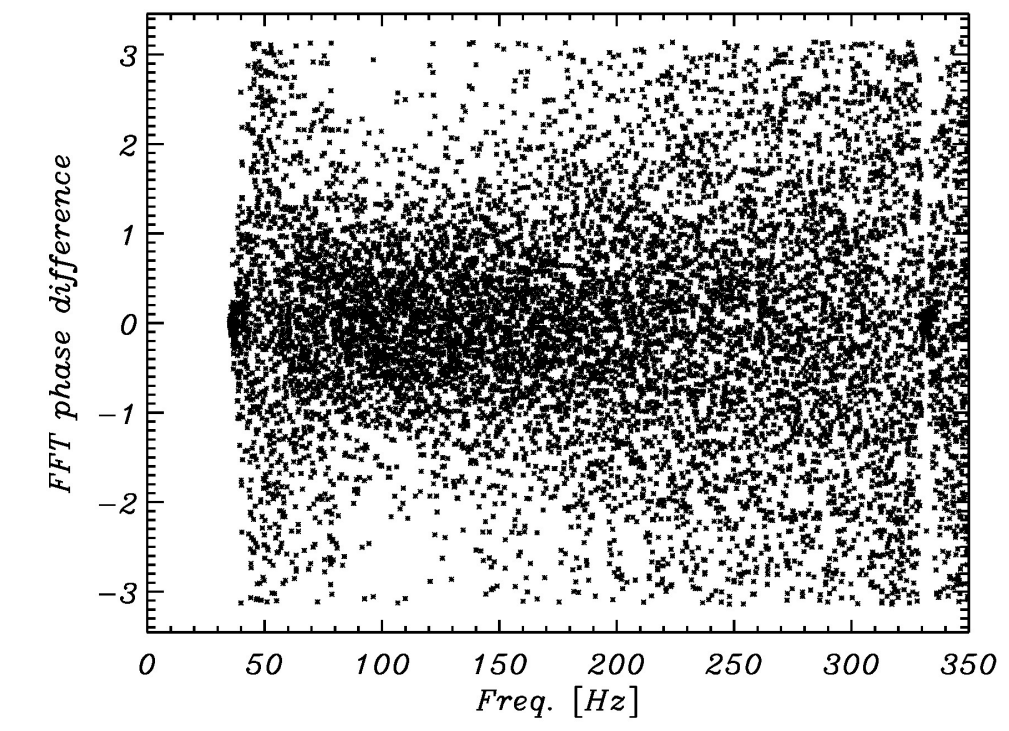
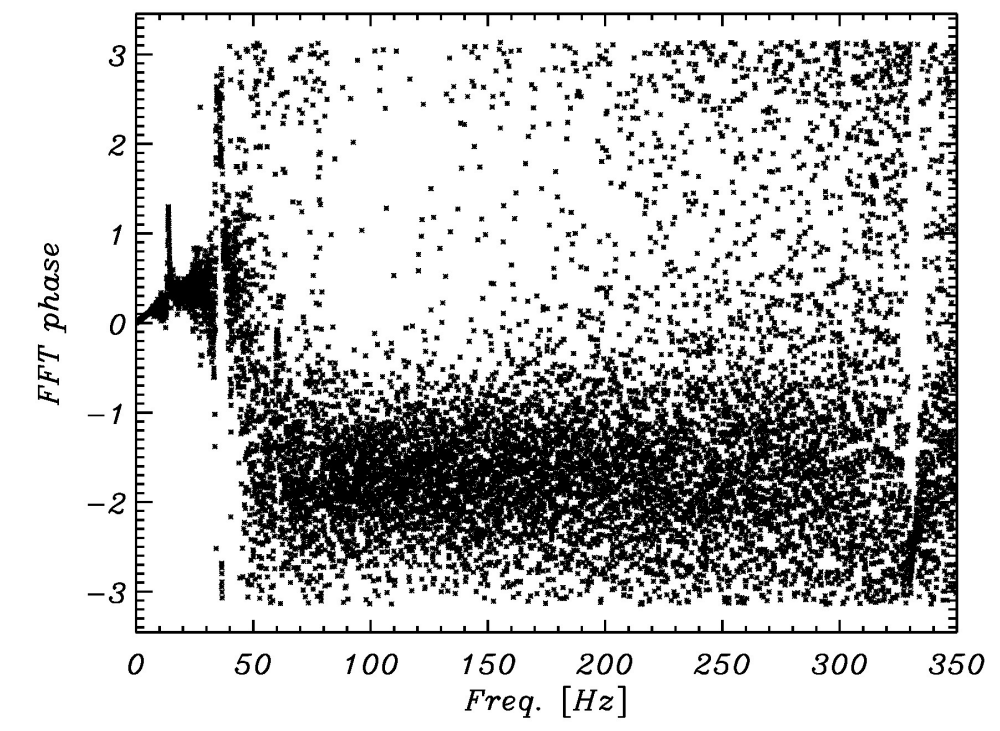
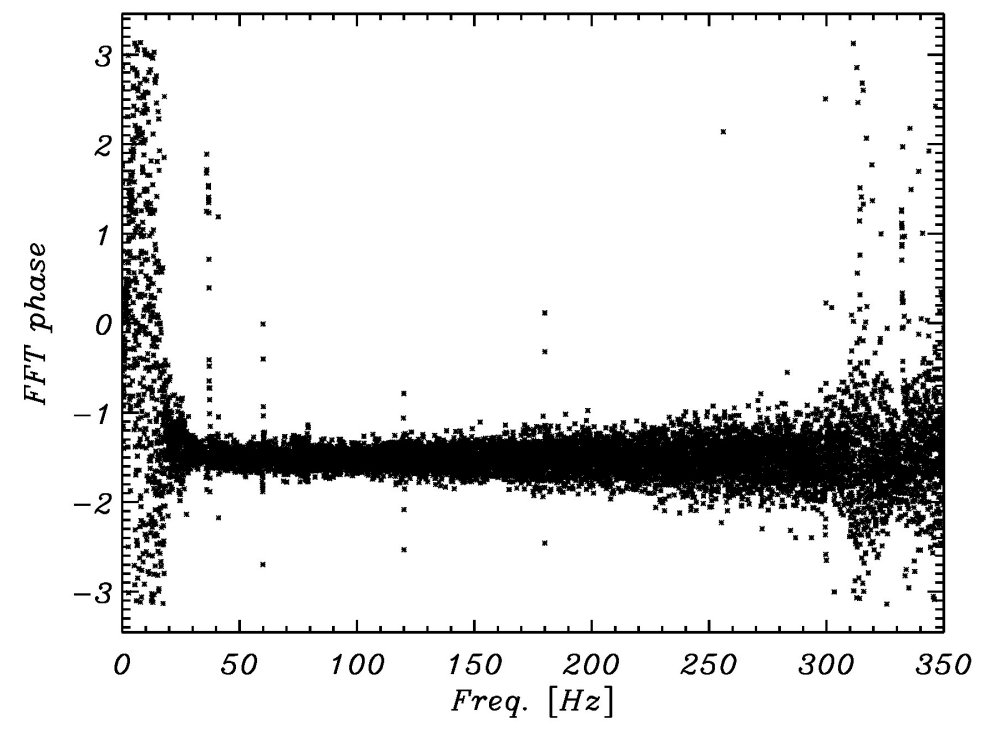
Duncan Brown
Syracuse University

GW150914 Residuals

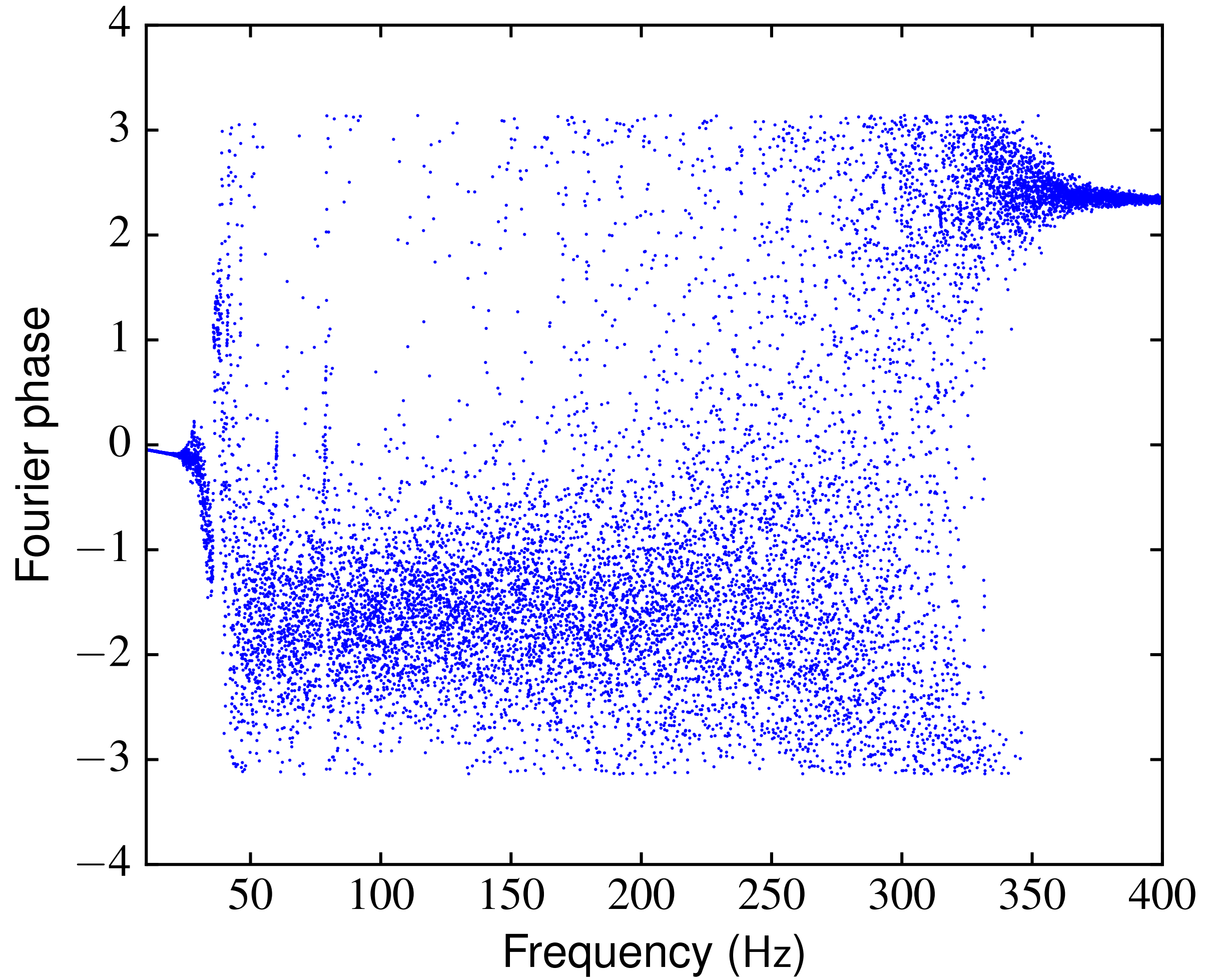
Hanford, Washington (H1)

Livingston, Louisiana (L1)

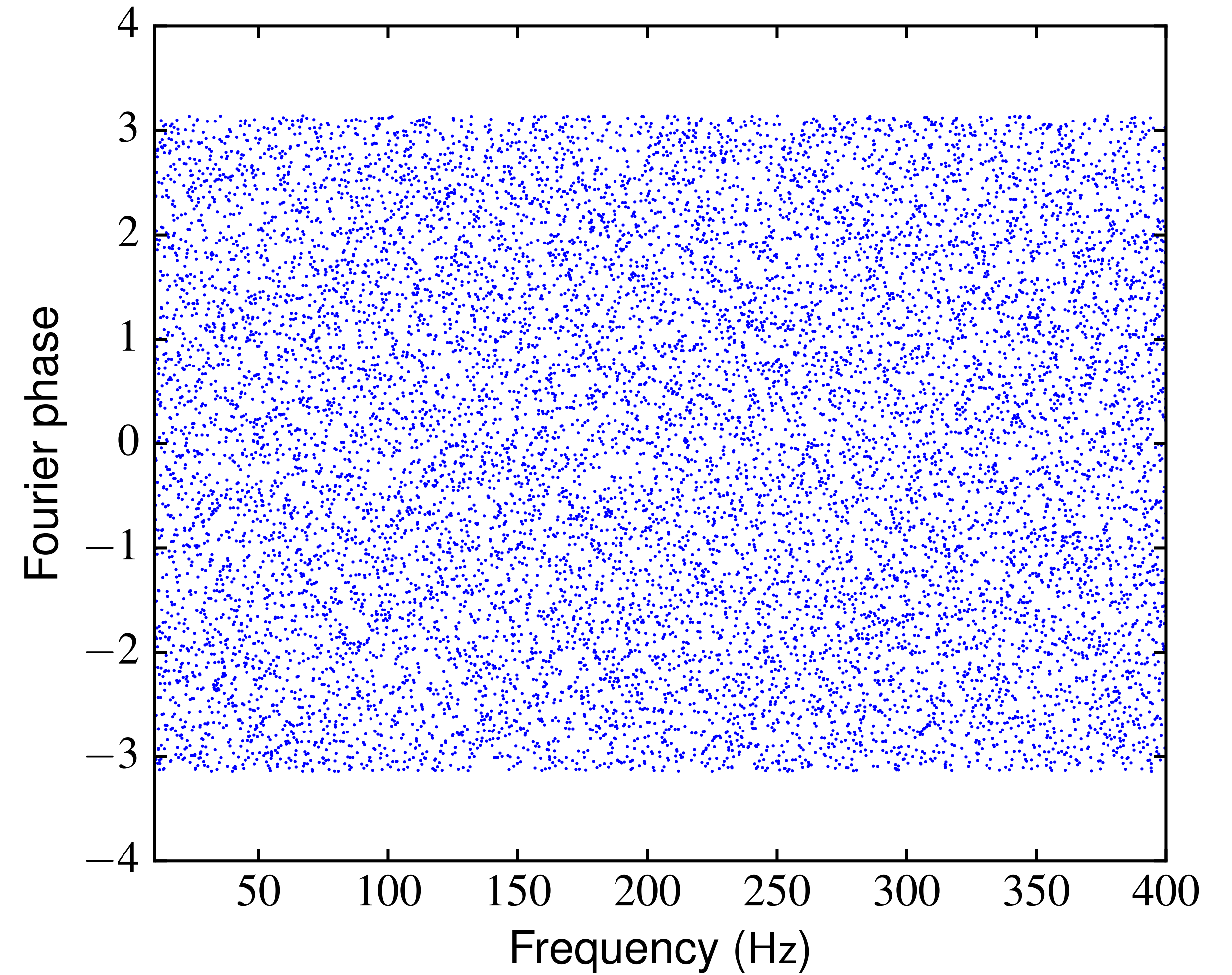




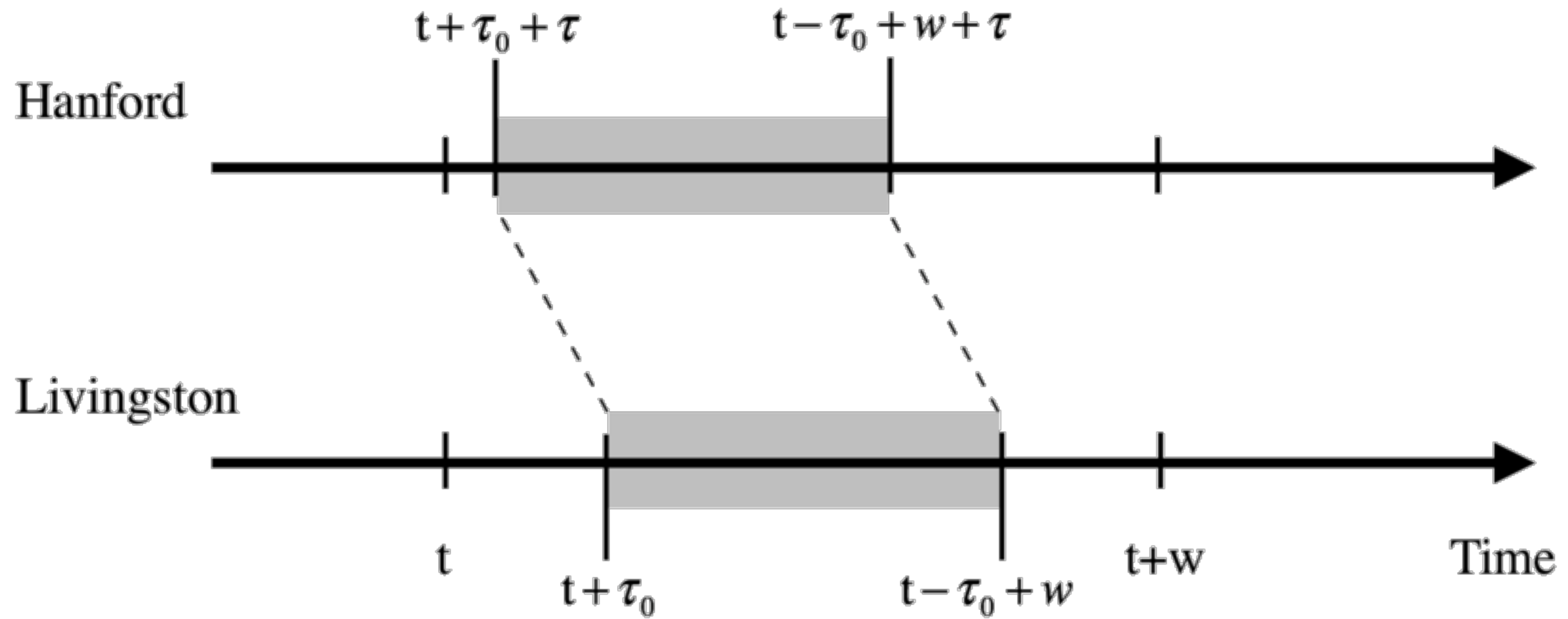
Unwindowed

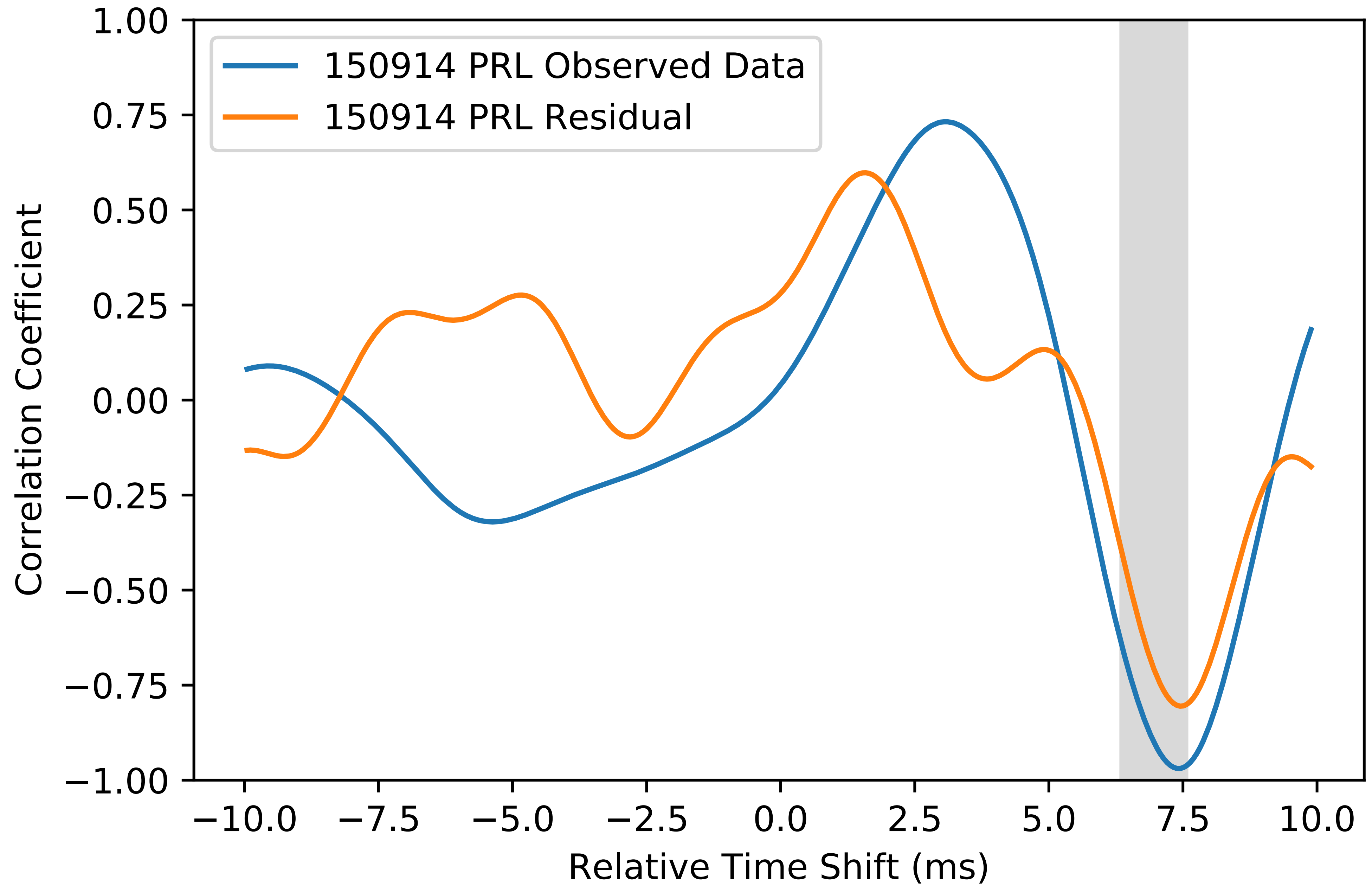


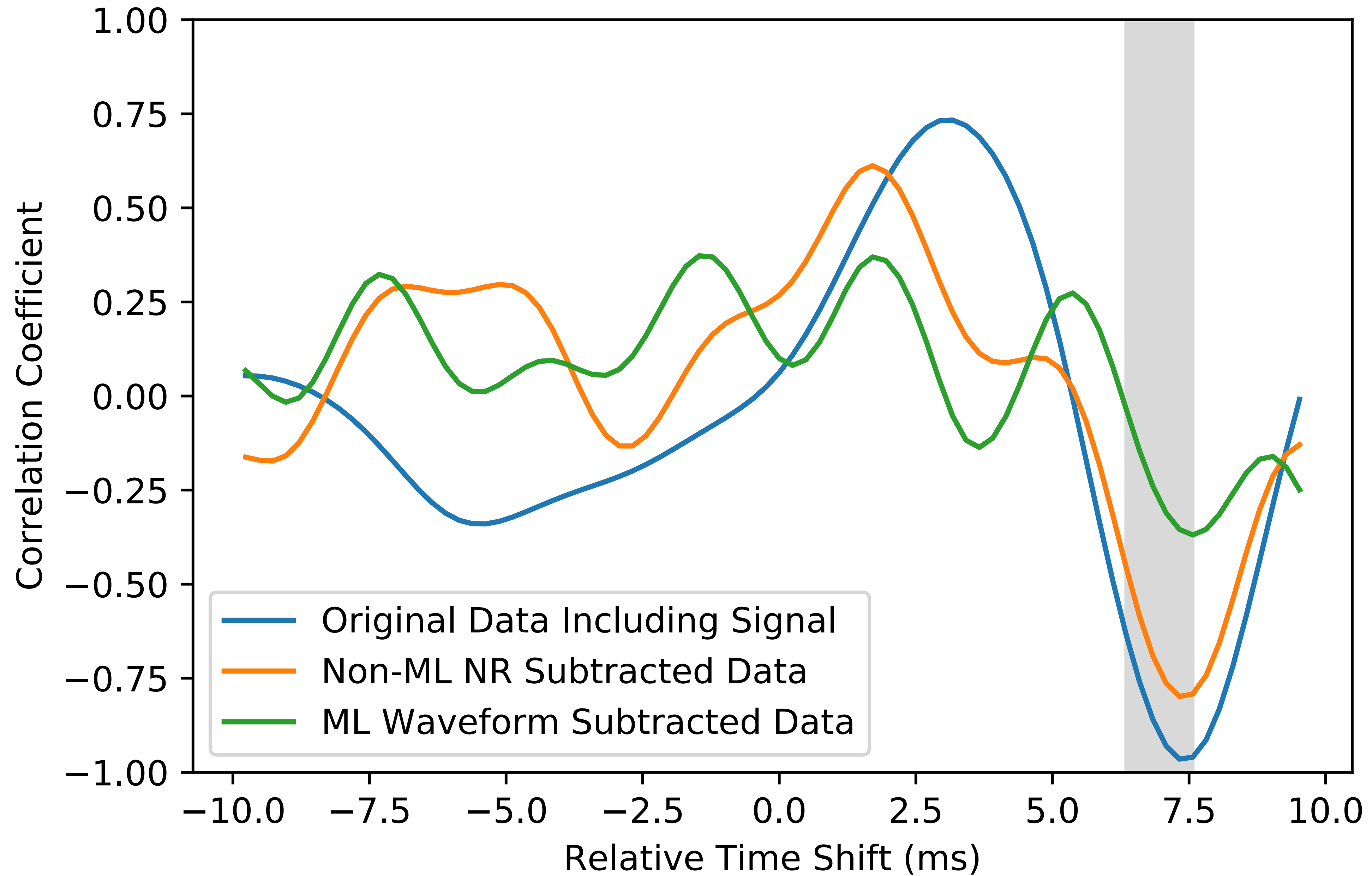
Properly windowed

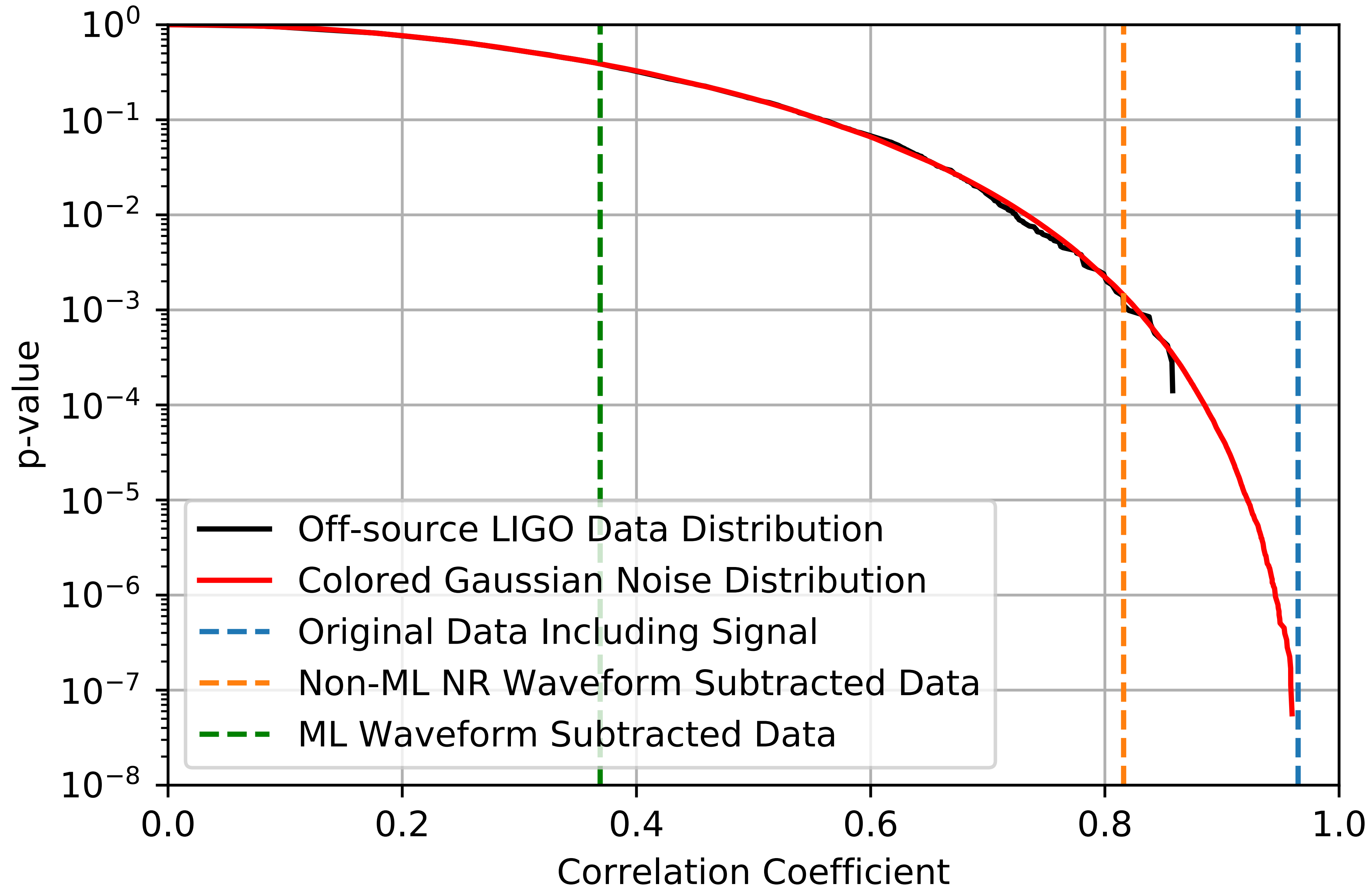


$$C(\tau; t, \omega) = \int_t^{t+\omega} \frac{H(t' + \tau)}{\sigma_H} \frac{L(t')}{\sigma_L} dt'$$

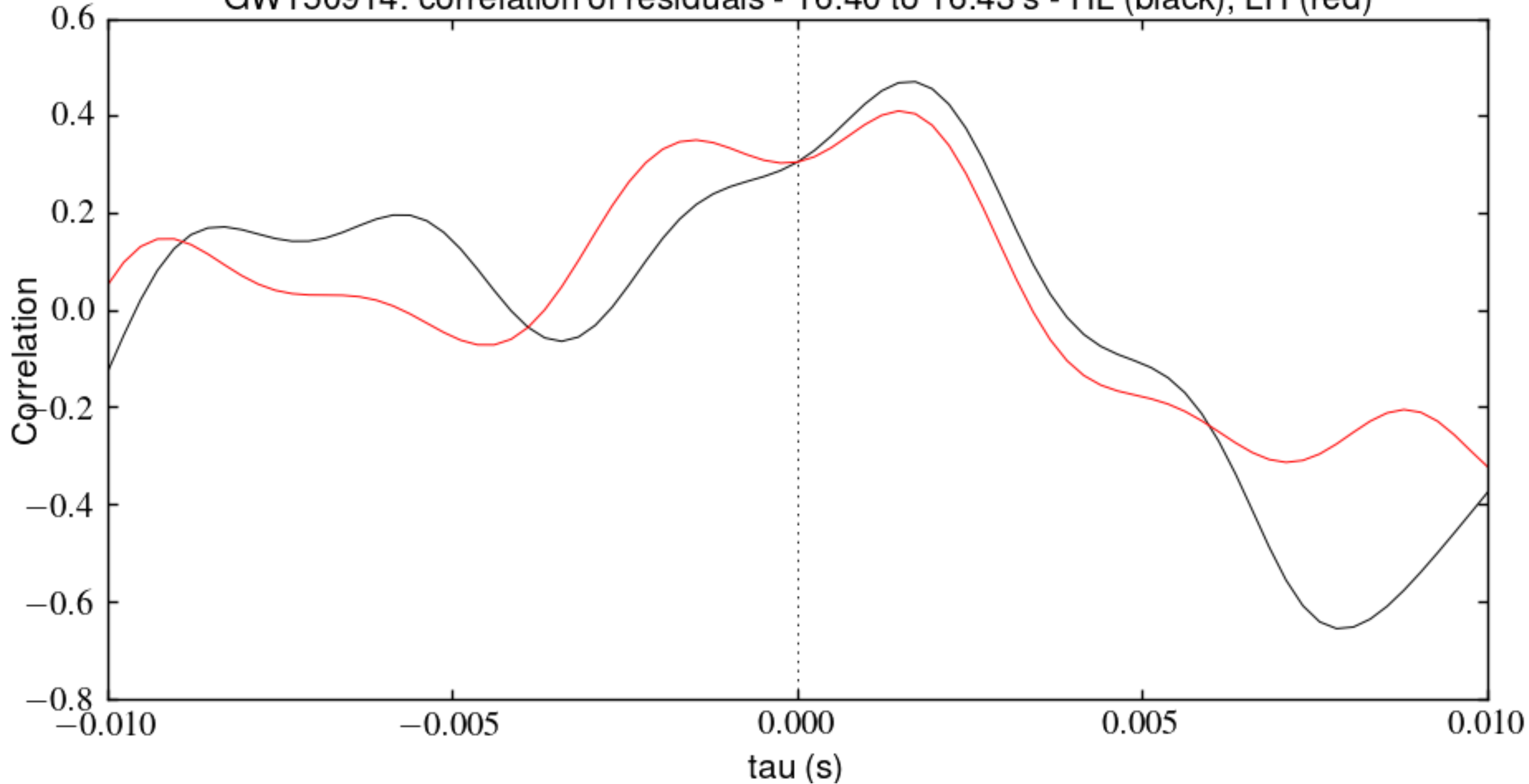




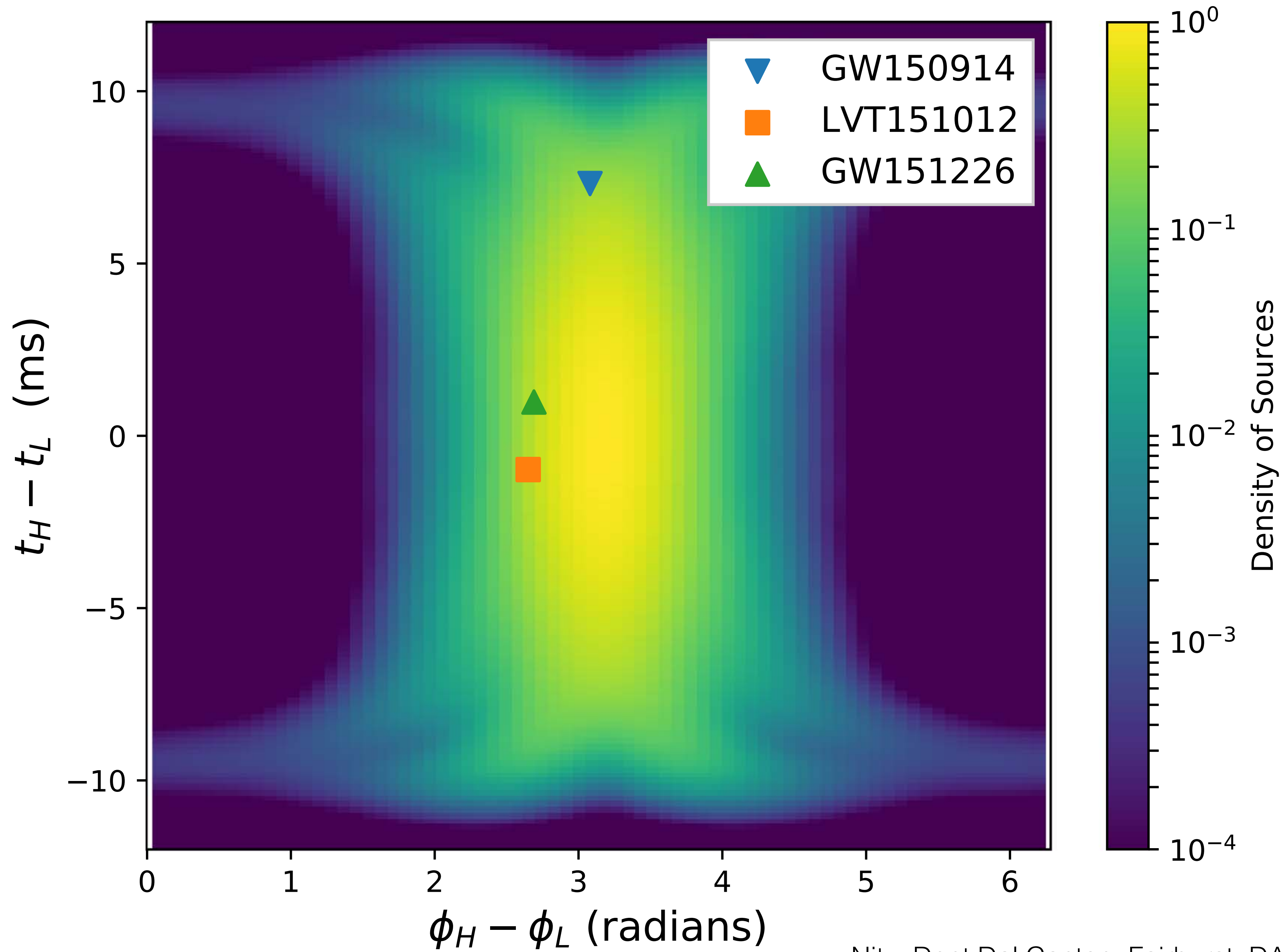


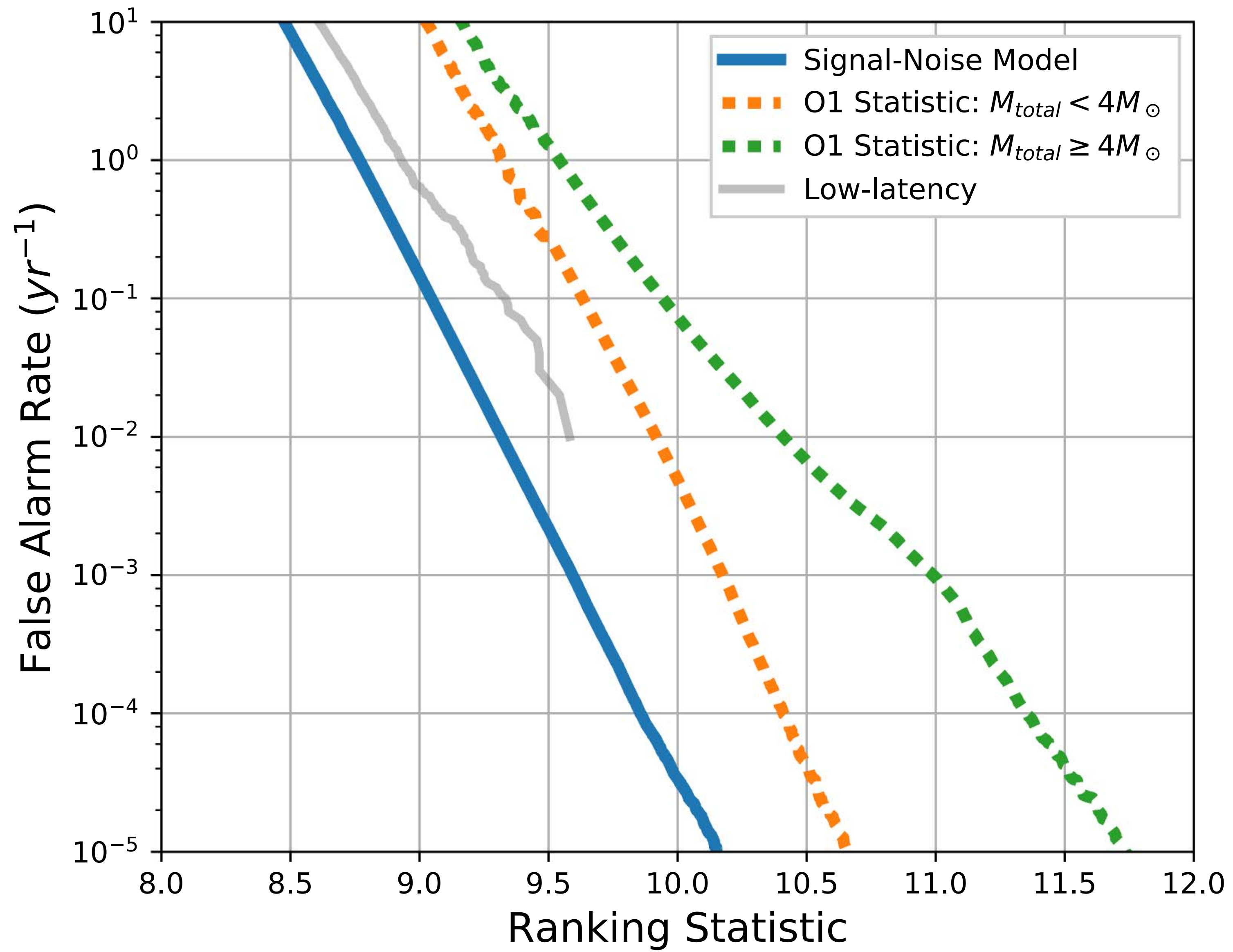


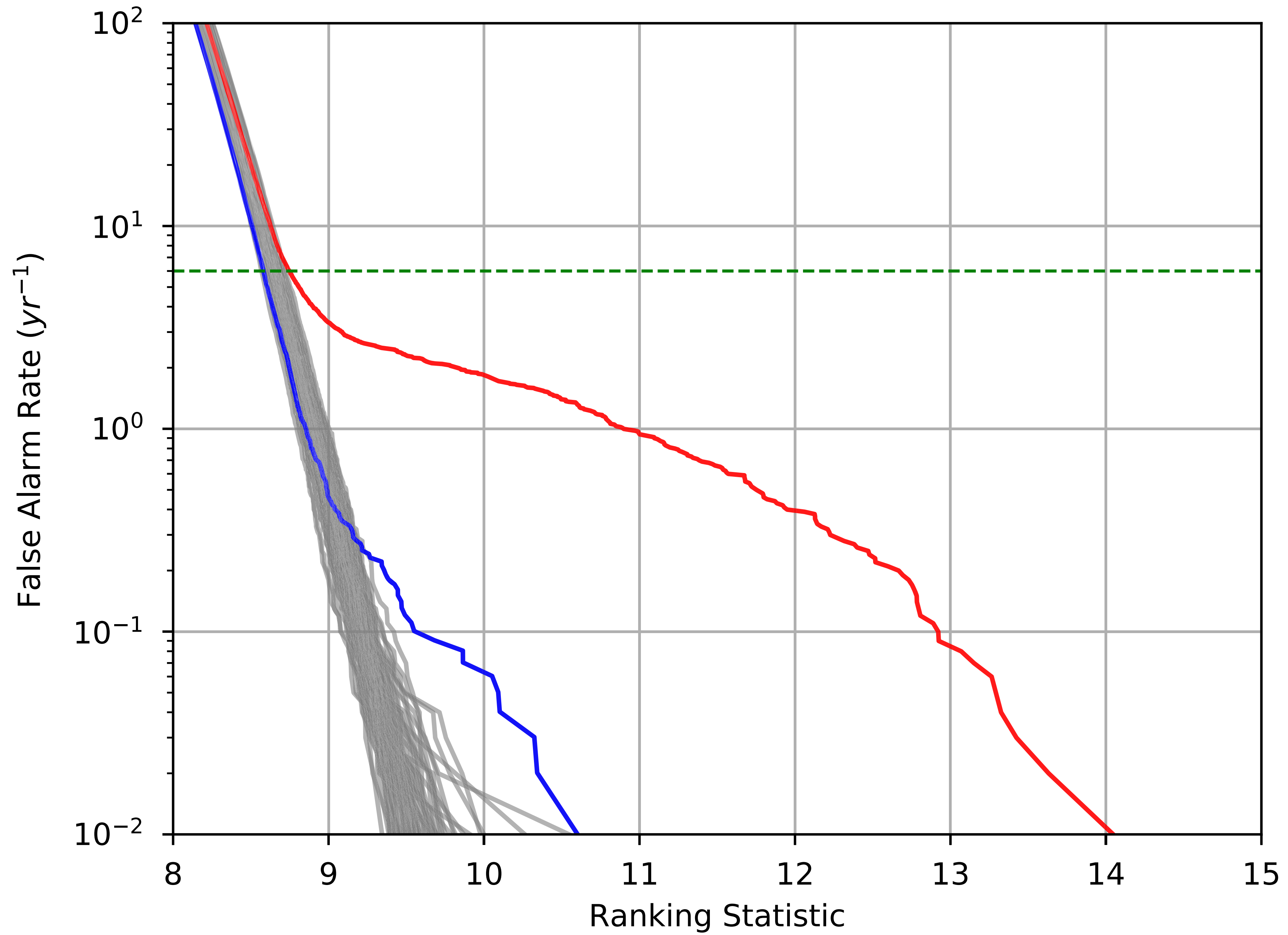
GW150914: correlation of residuals - 16.40 to 16.43 s - HL (black), LH (red)



LIGO/Virgo Event Significance







Superevent Info

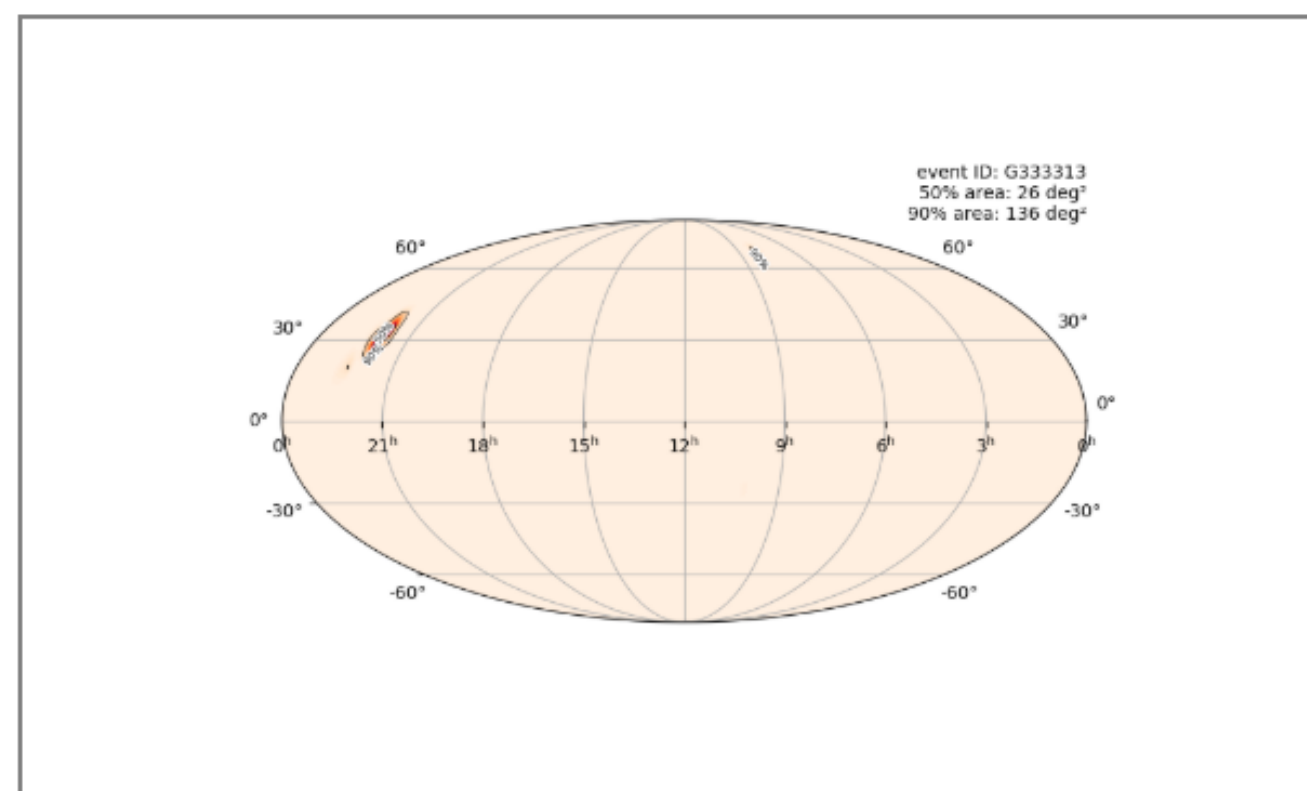
Superevent ID	Category	Labels	FAR (Hz)	FAR (yr ⁻¹)	t_start	t_0	t_end	UTC <input type="button" value="UTC"/> Submission time	Links
S190518bb	Production	ADVNO SKYMAP_READY EMBRIGHT_READY PASTRO_READY DQOK GCN_PRELIM_SENT	1.004e-08	1 per 3.1557 years	1242242376.474609	1242242377.474609	1242242380.922655	2019-05-18 19:19:39 UTC	Data

Preferred Event Info

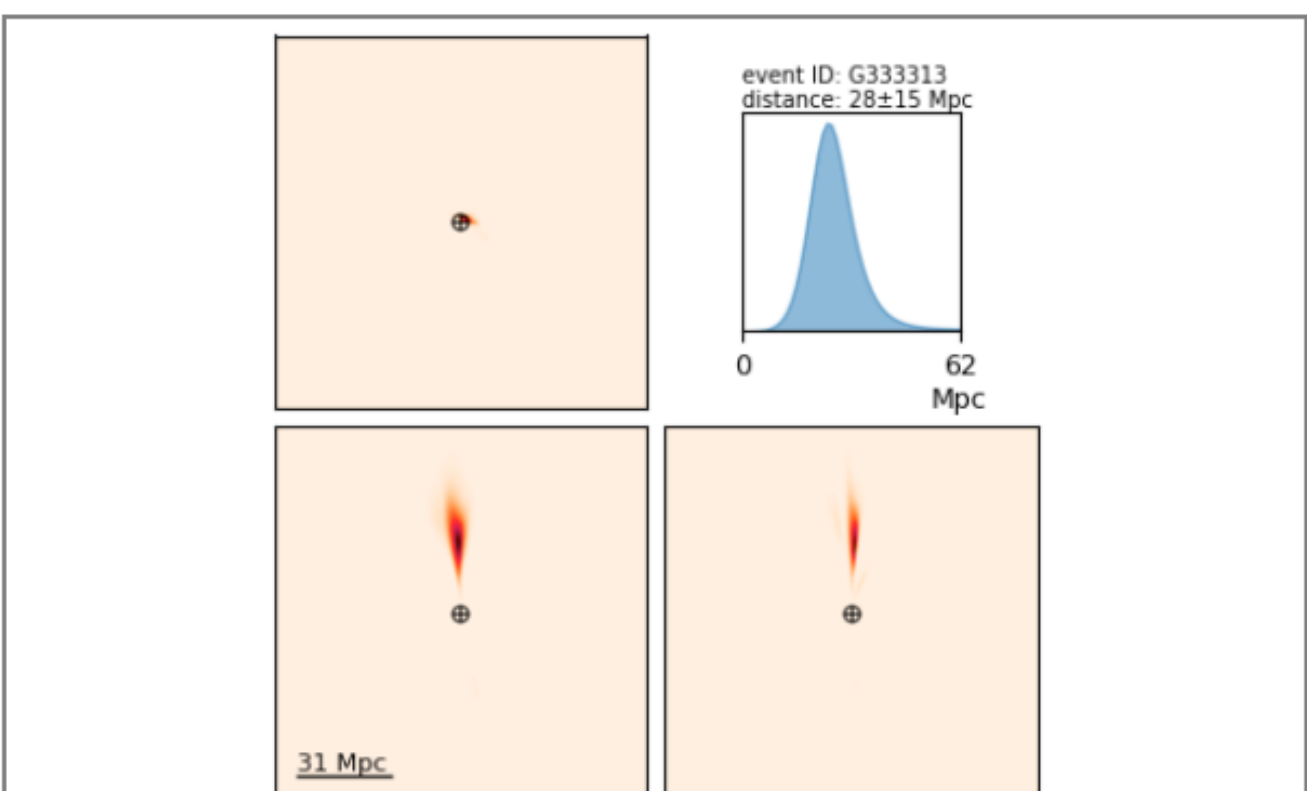
Group	Pipeline	Search	Instruments	GPS Time <input type="button" value="GPS Time"/> Event time	UTC <input type="button" value="UTC"/> Submission time
CBC	gstlal	AllSky	H1,L1,V1	1242242379.9227	2019-05-18 19:19:52 UTC

Superevent Log Messages

Sky Localization

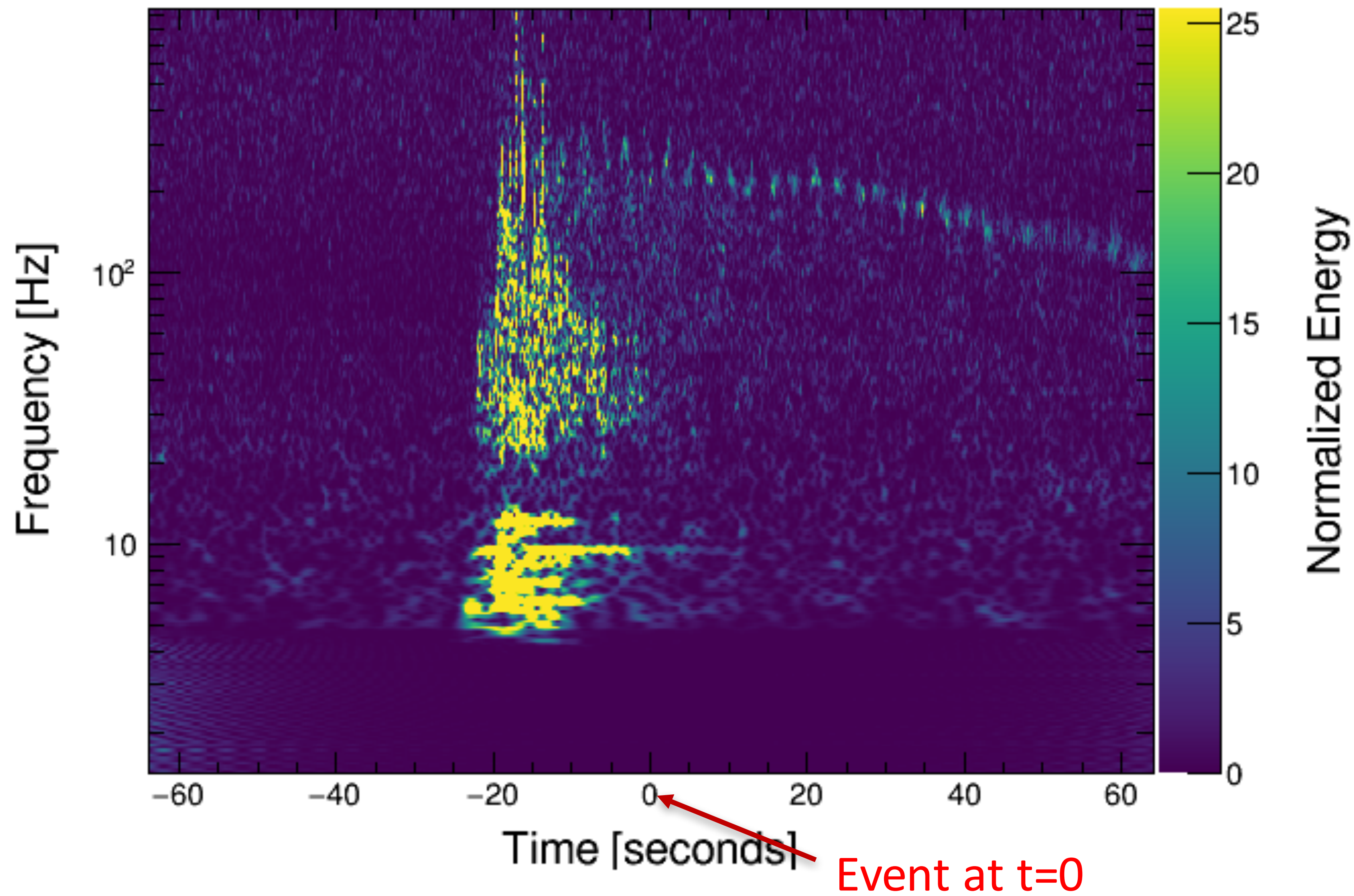


Mollweide projection of [bayestar.fits](#) [bayestar.png](#). Submitted by LIGO/Virgo EM Follow-Up on May 18, 2019 19:25:33 UTC



Volume rendering of [bayestar.fits](#) [bayestar.volume.png](#). Submitted by LIGO/Virgo EM Follow-Up on May 18, 2019 19:29:11 UTC

H1:GDS-CALIB_STRAIN,reduced at 1242242379.923 with Q of 45.3



TITLE: GCN CIRCULAR
NUMBER: 24237
SUBJECT: LIGO/Virgo S190426c: Identification of a GW compact binary merger candidate
DATE: 19/04/26 16:45:04 GMT
FROM: Deep Chatterjee at University of Wisconsin, Milwaukee <deep@uwm.edu>

The LIGO Scientific Collaboration and the Virgo Collaboration report:

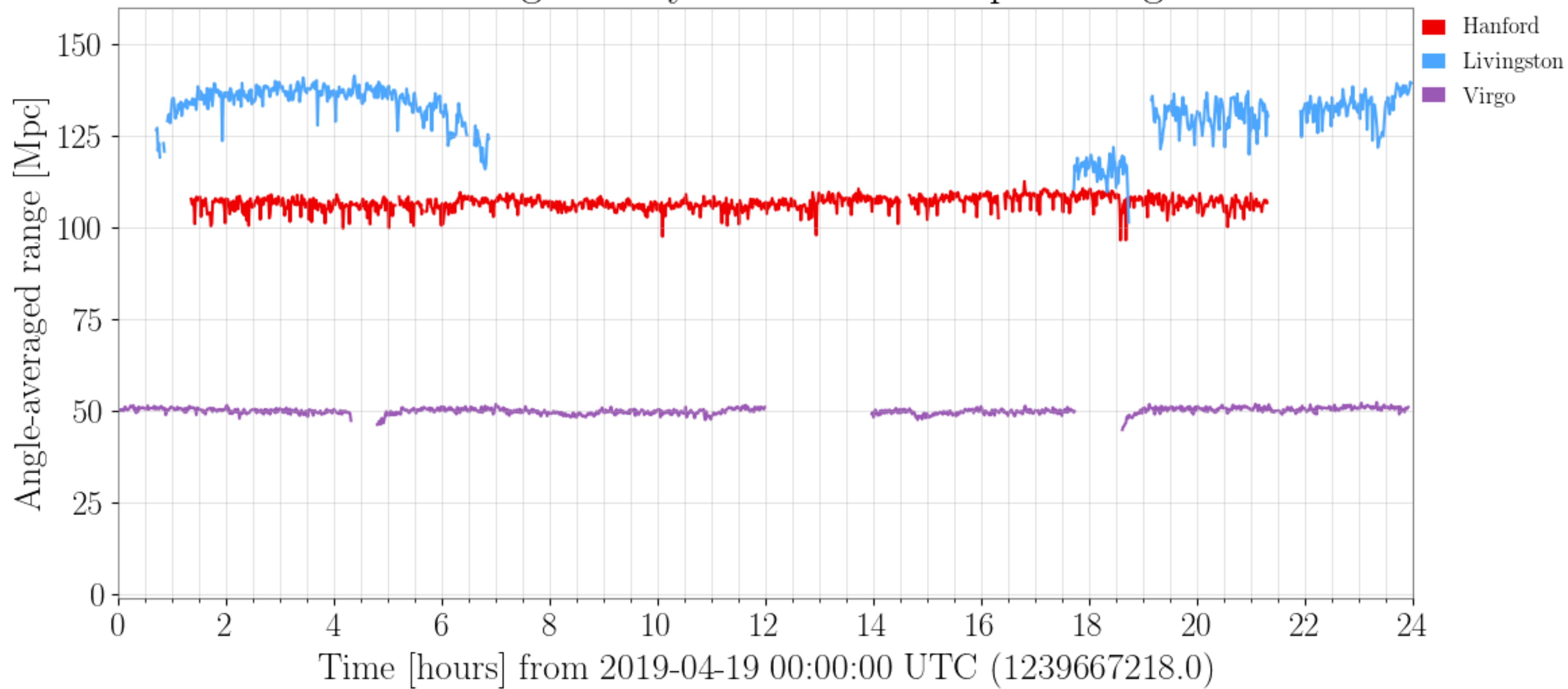
We identified the compact binary merger candidate S190426c during real-time processing of data from LIGO Hanford Observatory (H1), LIGO Livingston Observatory (L1), and Virgo Observatory (V1) at 2019-04-26 15:21:55.337 UTC (GPS time: 1240327333.337). **The candidate was found by the GstLAL [1], MBTAOnline [2], PyCBC Live [3], and SPIIR [4] analysis pipelines.**

S190426c is an event of interest because its false alarm rate, as estimated by the online analysis, is $1.9e-08$ Hz, or about one in 1 year, 7 months. The event's properties can be found at this URL:

<https://gracedb.ligo.org/superevents/S190426c>

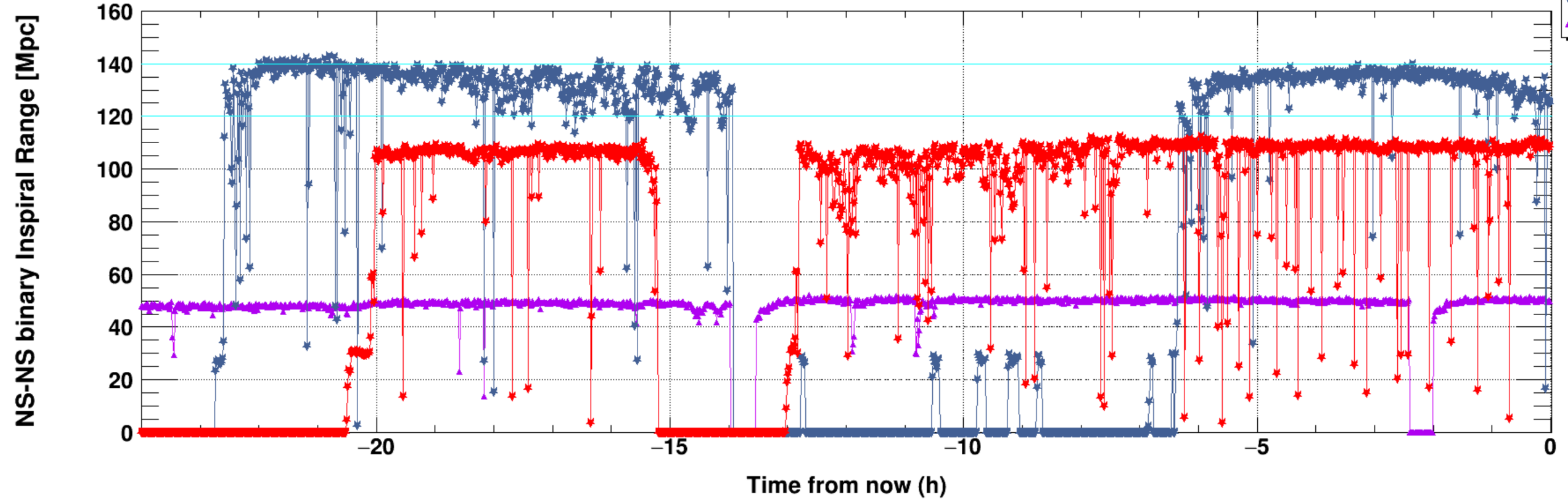
The classification of the GW signal, in order of descending probability, is BNS (49%), MassGap (24%), Terrestrial (14%), NSBH (13%), or BBH (<1%).

LIGO-Virgo binary neutron star inspiral range



SenseMon range

★ H1
★ L1
▲ V1



T0=18/04/2019 06:43:42

Avg=1