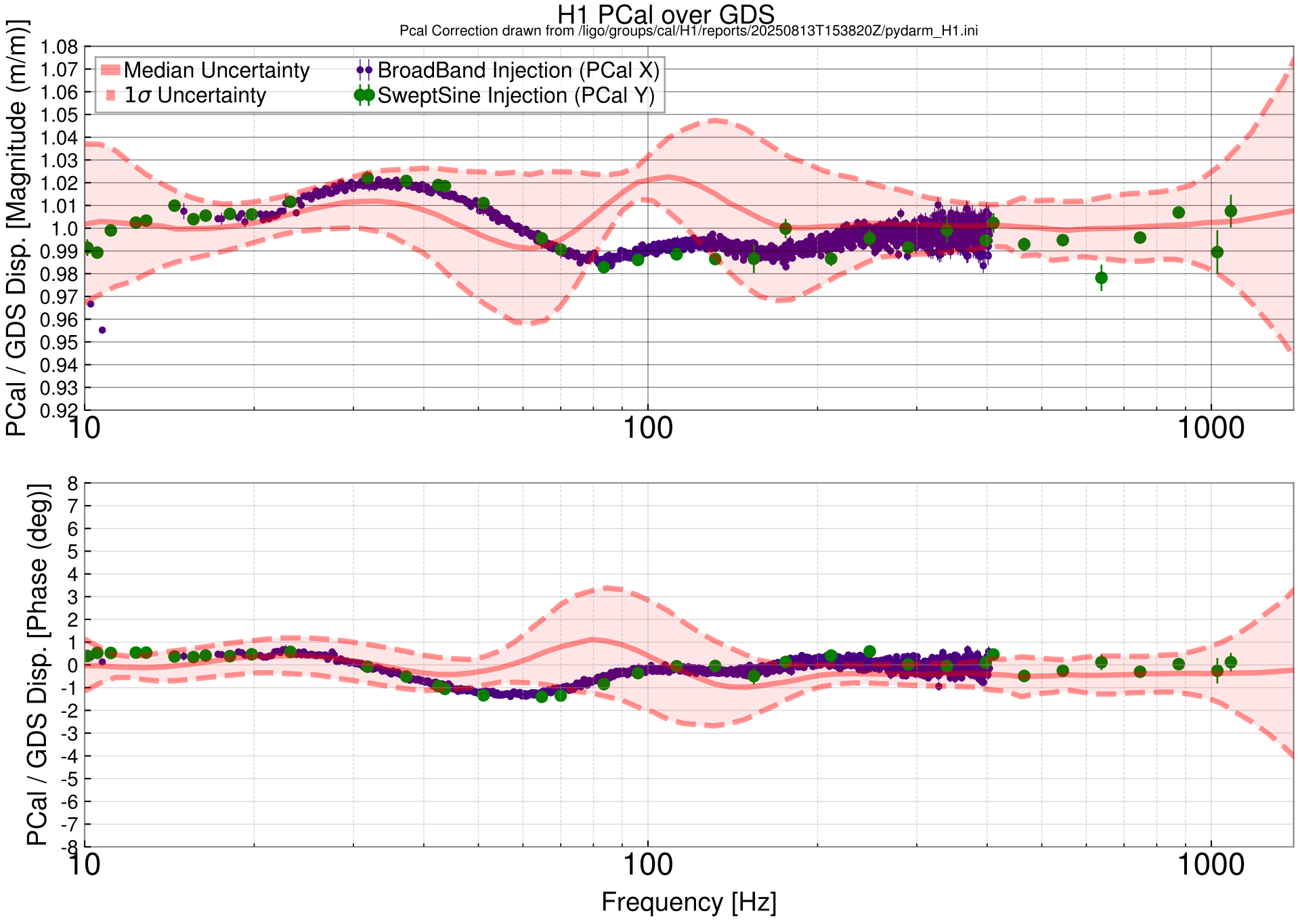
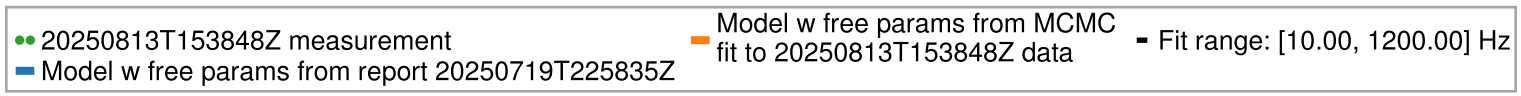
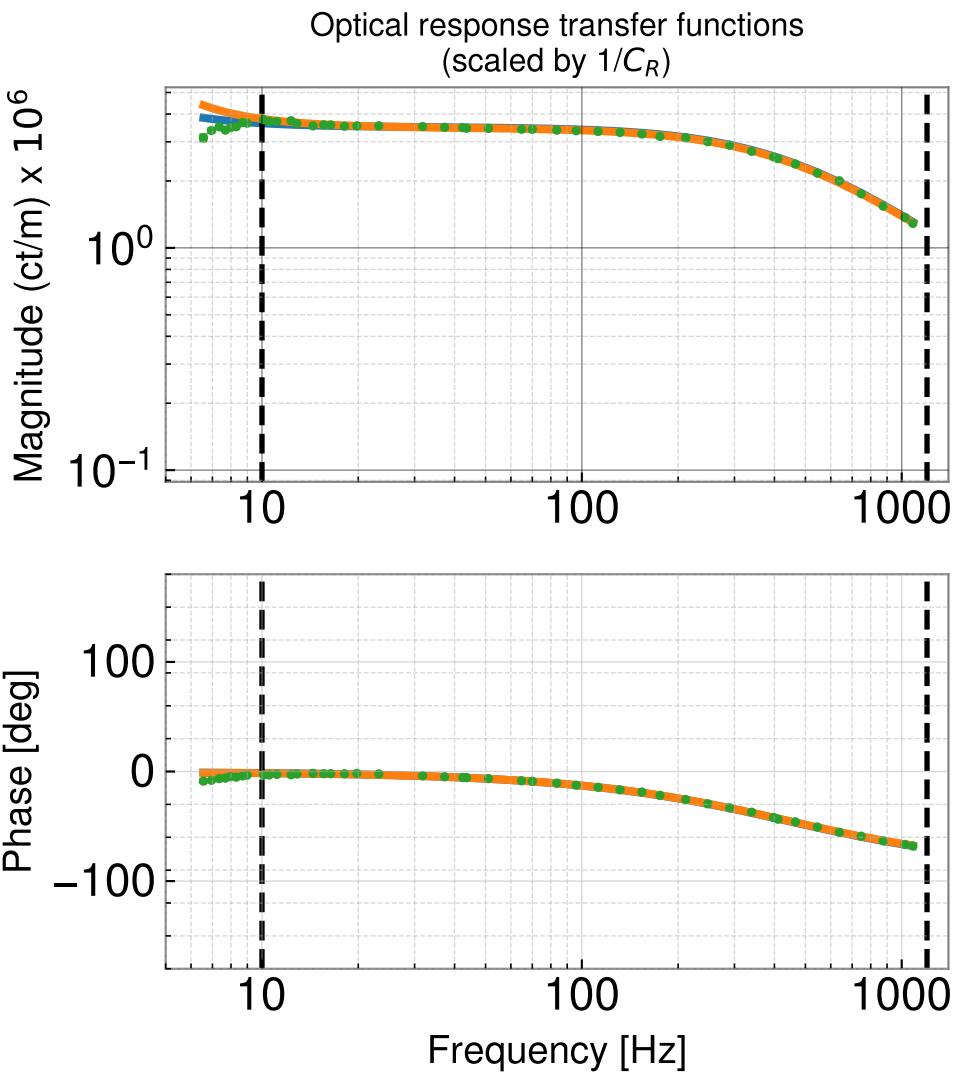
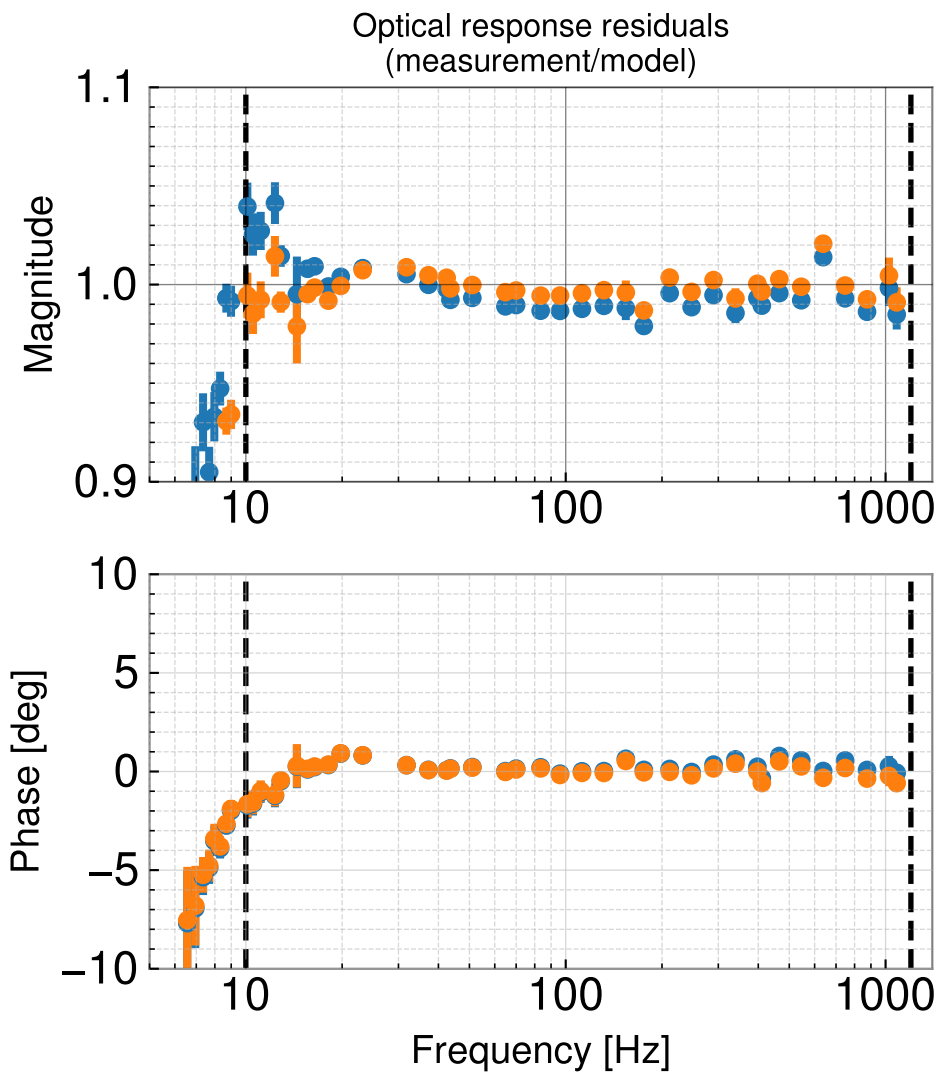

H1 PCal over GDS
Pcal Correction drawn from /ligo/groups/cal/H1/reports/20250813T153820Z/pydarm_H1.ini
Median Uncertainty
1σ Uncertainty
BroadBand Injection (PCal X)
SweptSine Injection (PCal Y)
PCal / GDS Disp. [Magnitude (m/m)]
PCal / GDS Disp. [Phase (deg)]
Frequency [Hz]
10
100
1000

# H1 sensing model MCMC summary

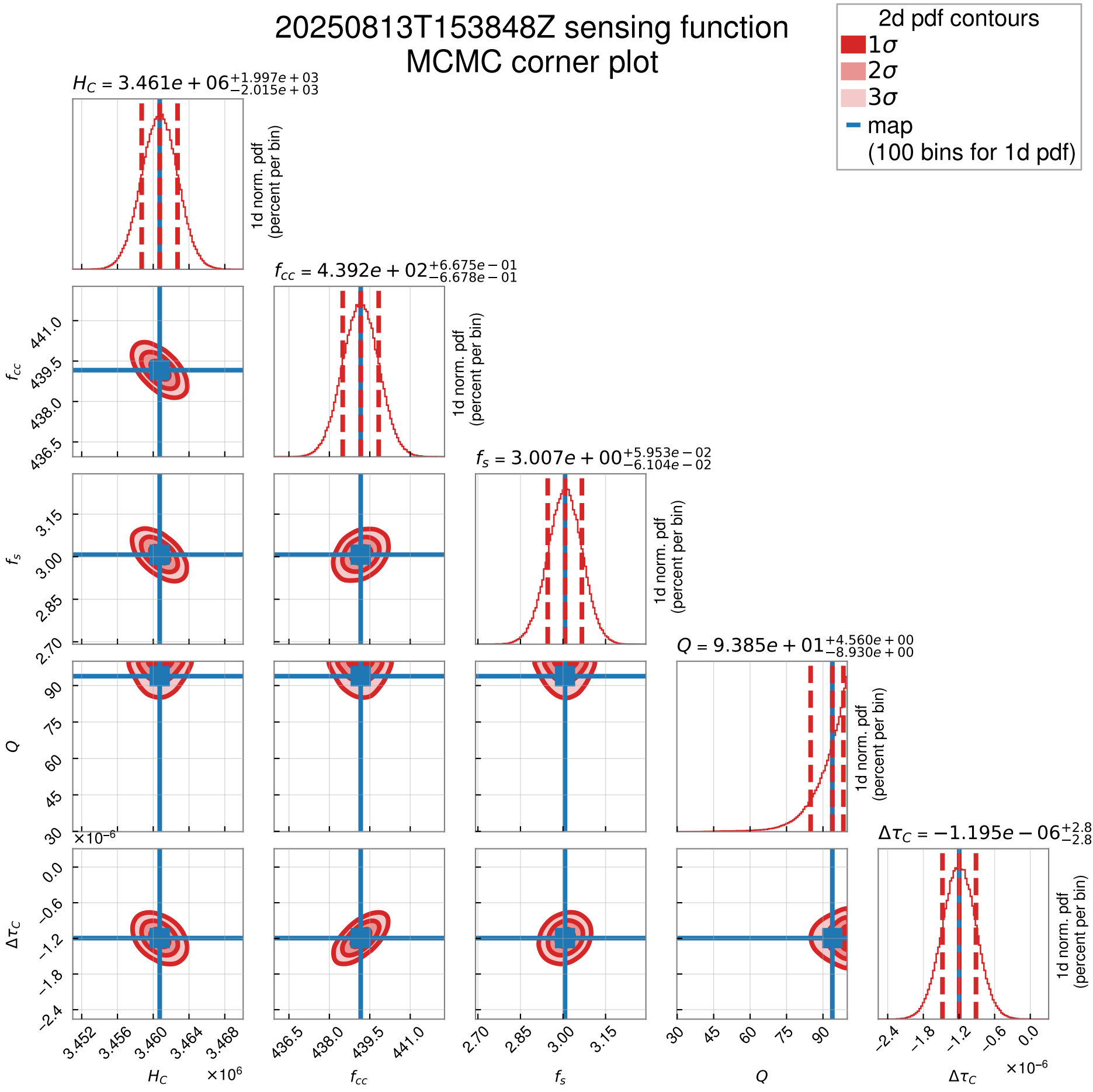
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20250813T153820Z/pydarm_H1.ini



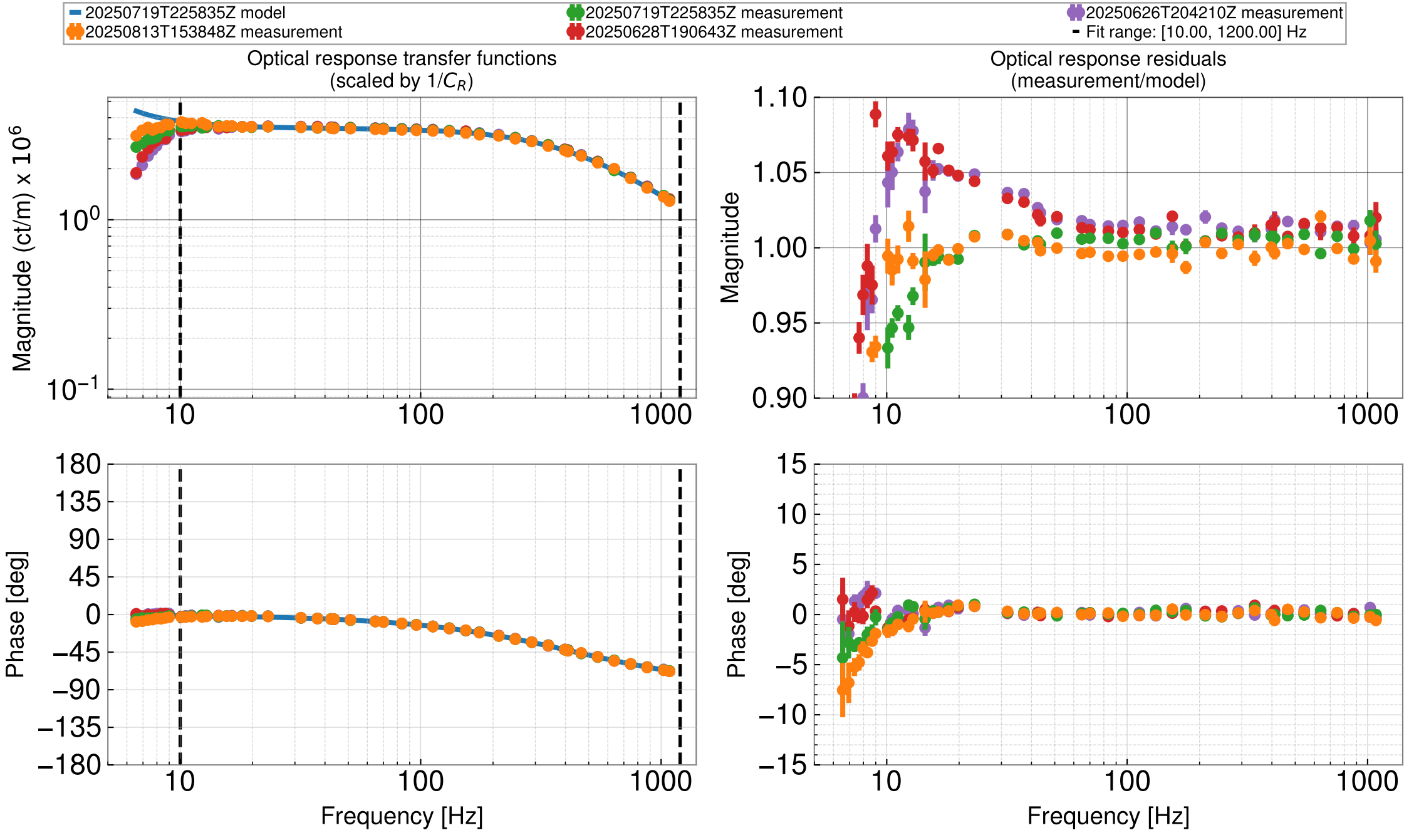



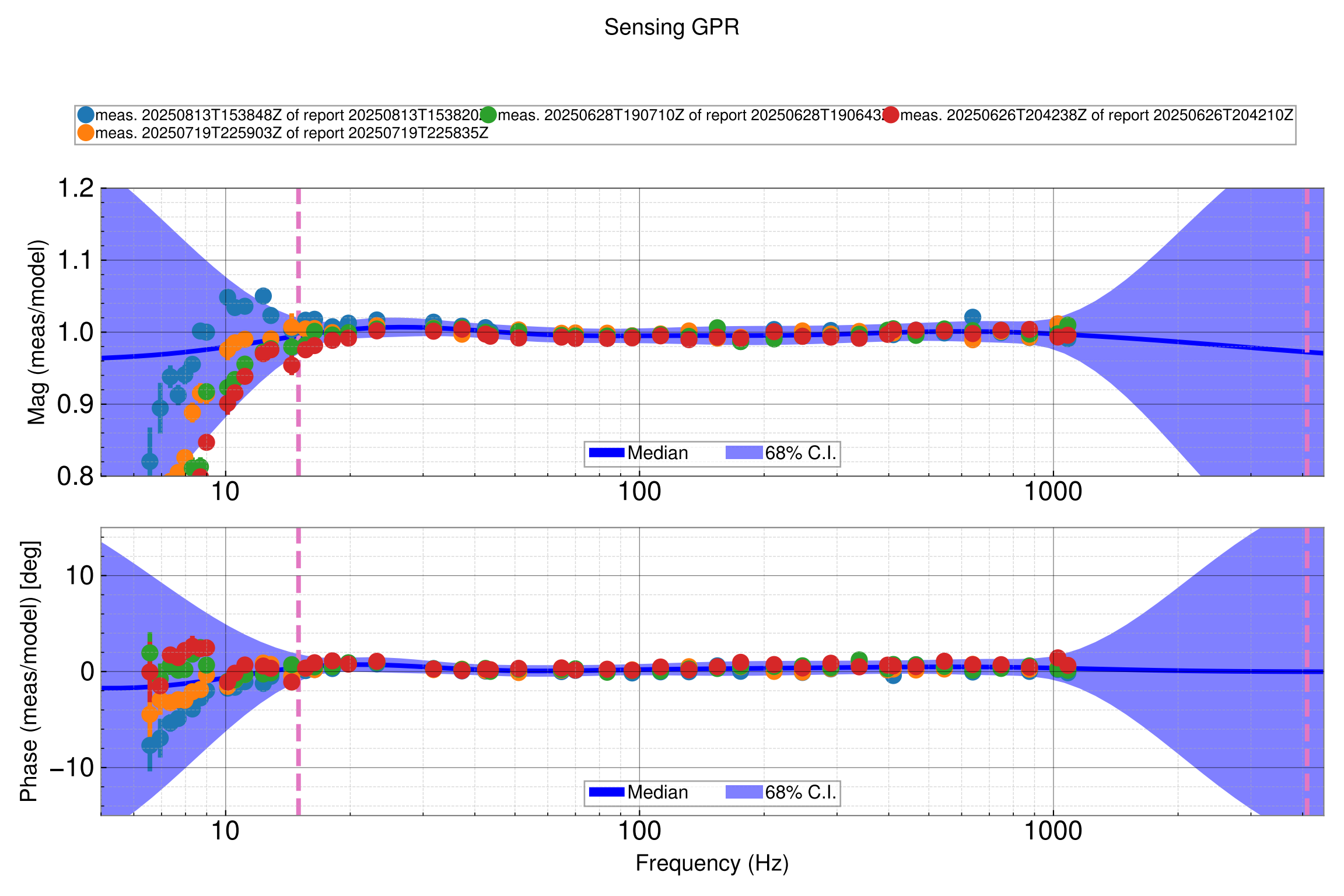

| Parameter (value +/-) | value | + | - |
|---|---|---|---|
| Optical gain, H_c (ct/m) | 3.461e+06 | 1997 (0.06%) | 2015 (0.06%) |
| Cavity_pole, f_cc (Hz) | 439.2 | 0.6675 (0.15%) | 0.6678 (0.15%) |
| Detuned SRC spring frequency, f_s (Hz) | 3.007 | 0.05953 (1.98%) | 0.06104 (2.03%) |
| Detuned SRC spring quality factor, Q_s | 93.85 | 4.56 (4.86%) | 8.93 (9.52%) |
| Residual time delay, tau_c (s) | -1.195e-06 | 2.814e-07 (-23.54%) | 2.826e-07 (-23.65%) |


20250813T153848Z sensing function
MCMC corner plot
2d pdf contours
1σ
2σ
3σ
map
(100 bins for 1d pdf)
$H_C = 3.461e+06^{+1.997e+03}_{-2.015e+03}$
$f_{cc} = 4.392e+02^{+6.675e-01}_{-6.678e-01}$
$f_s = 3.007e+00^{+5.953e-02}_{-6.104e-02}$
$Q = 9.385e+01^{+4.560e+00}_{-8.930e+00}$
$\Delta\tau_C = -1.195e-06^{+2.8}_{-2.8}$
1d norm. pdf
(percent per bin)
$H_C$
$f_{cc}$
$f_s$
$Q$
$\Delta\tau_C$
×10⁶
×10⁻⁶

# H1 sensing model history (last 9 measurements)

All fixed parameters drawn from /ligo/groups/cal/H1/reports/20250813T153820Z/pydarm_H1.ini

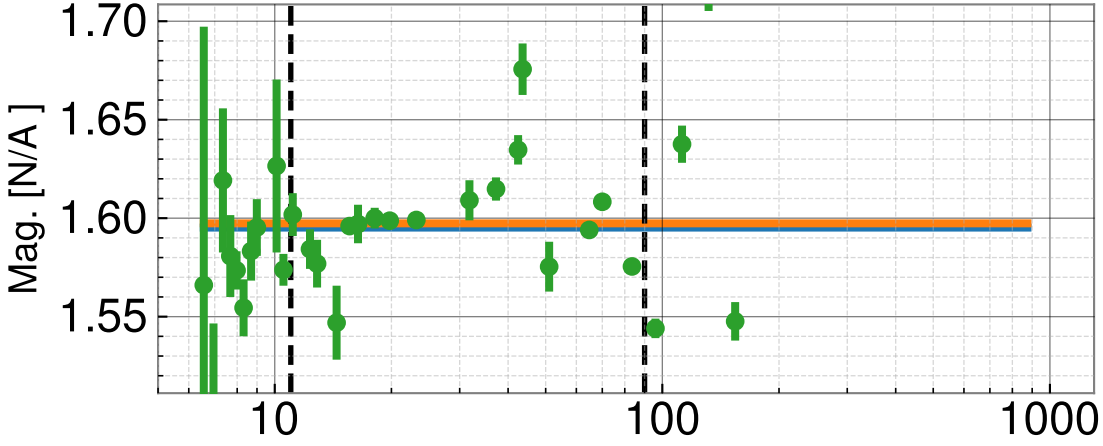



Sensing GPR
meas. 20250813T153848Z of report 20250813T153820Z
meas. 20250628T190710Z of report 20250628T190643Z
meas. 20250626T204238Z of report 20250626T204210Z
meas. 20250719T225903Z of report 20250719T225835Z
Mag (meas/model)
1.2
1.1
1.0
0.9
0.8
Median
68% C.I.
10
100
1000
Phase (meas/model) [deg]
10
0
−10
Median
68% C.I.
10
100
1000
Frequency (Hz)

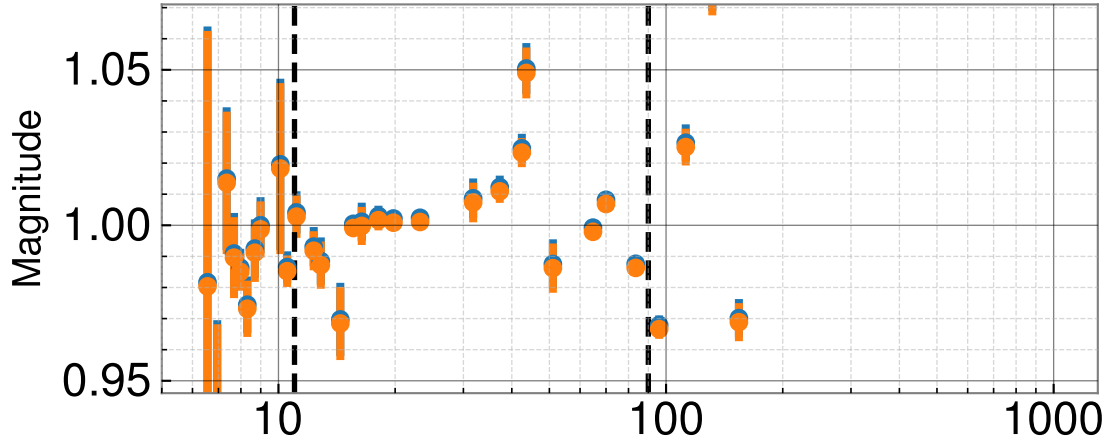
# H1SUSEX L1 actuation model MCMC summary

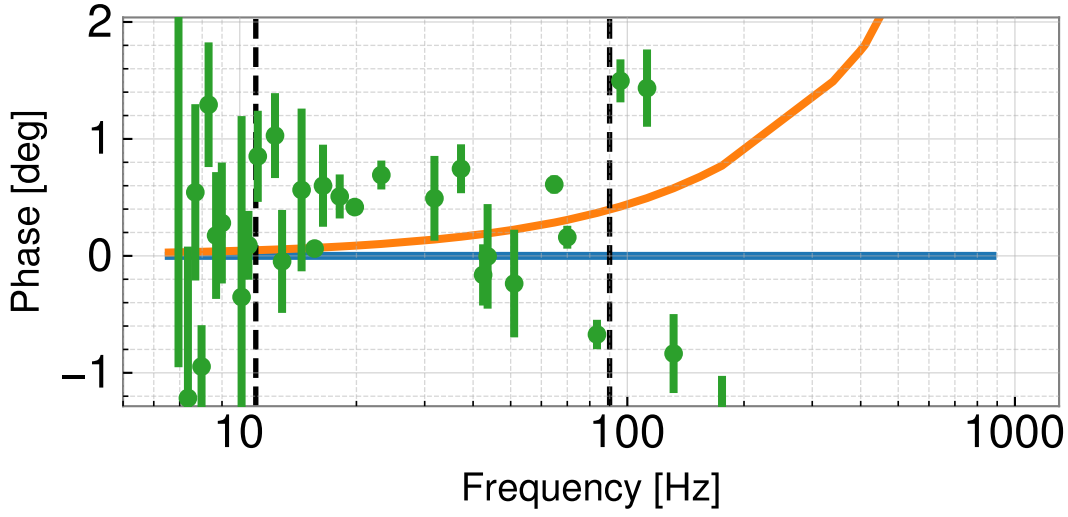
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20250813T153820Z/pydarm_H1.ini

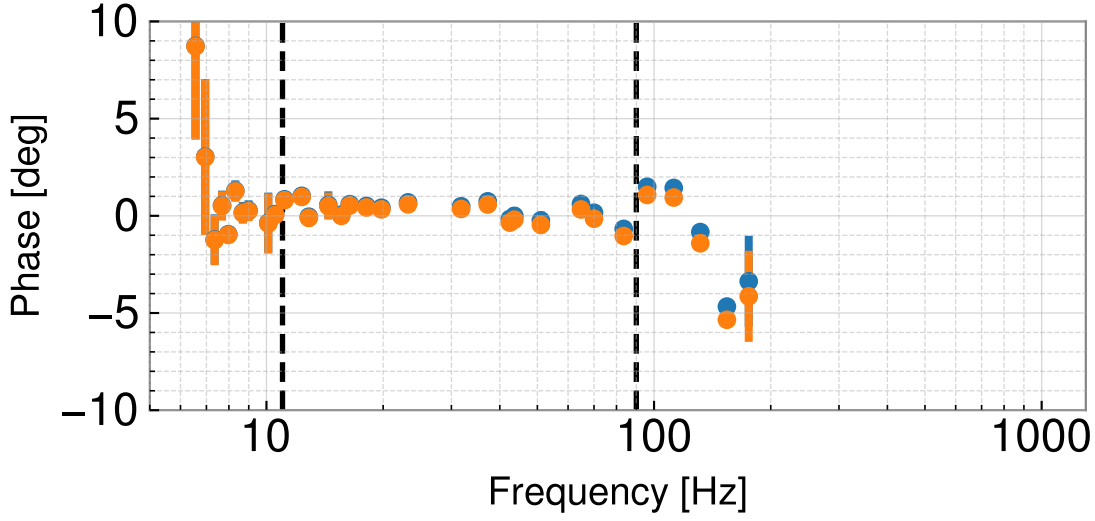

Actuation strength transfer functions
(scaled by $H_{ref}$)




Actuation strength residuals
(meas./model w. free params)

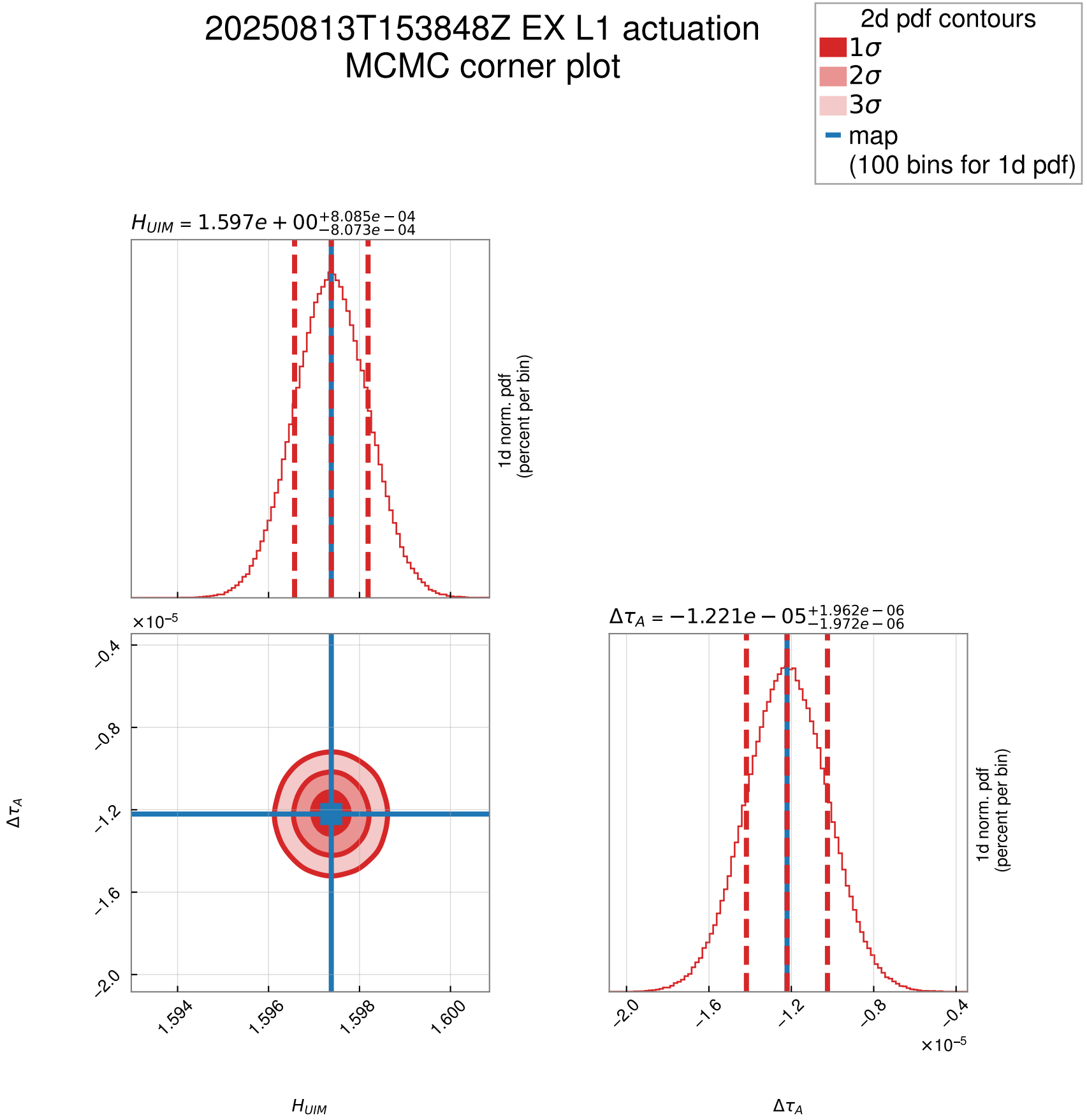



| Parameter (value +/-) | value | + | - |
|---|---|---|---|
| Actuation Gain, Hau (N/A) | 1.597 | 0.0008085 (0.05%) | 0.0008073 (0.05%) |
| Residual time delay, tau_A (s) | -1.221e-05 | 1.962e-06 (-16.07%) | 1.972e-06 (-16.16%) |

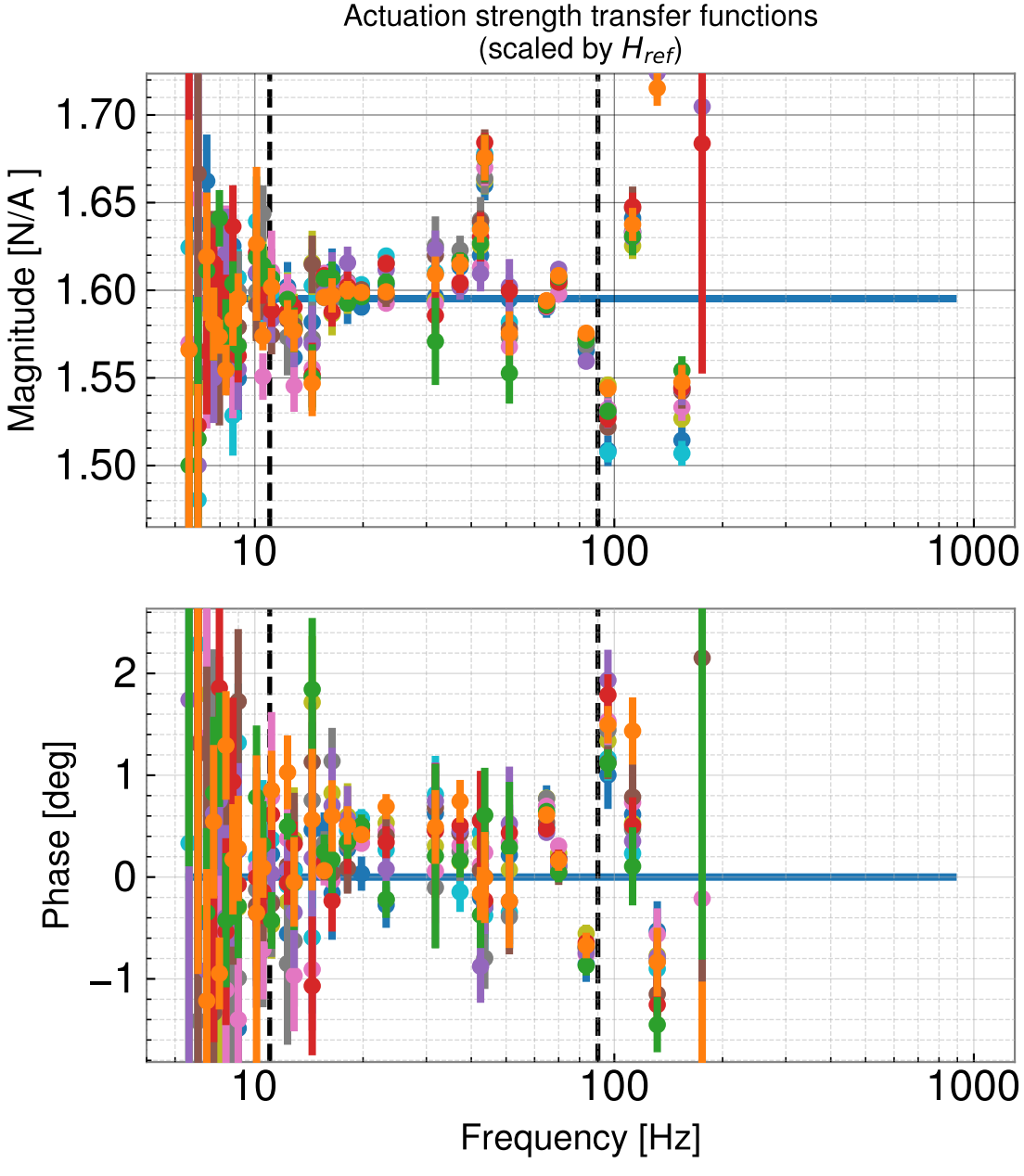
# 20250813T153848Z EX L1 actuation
# MCMC corner plot

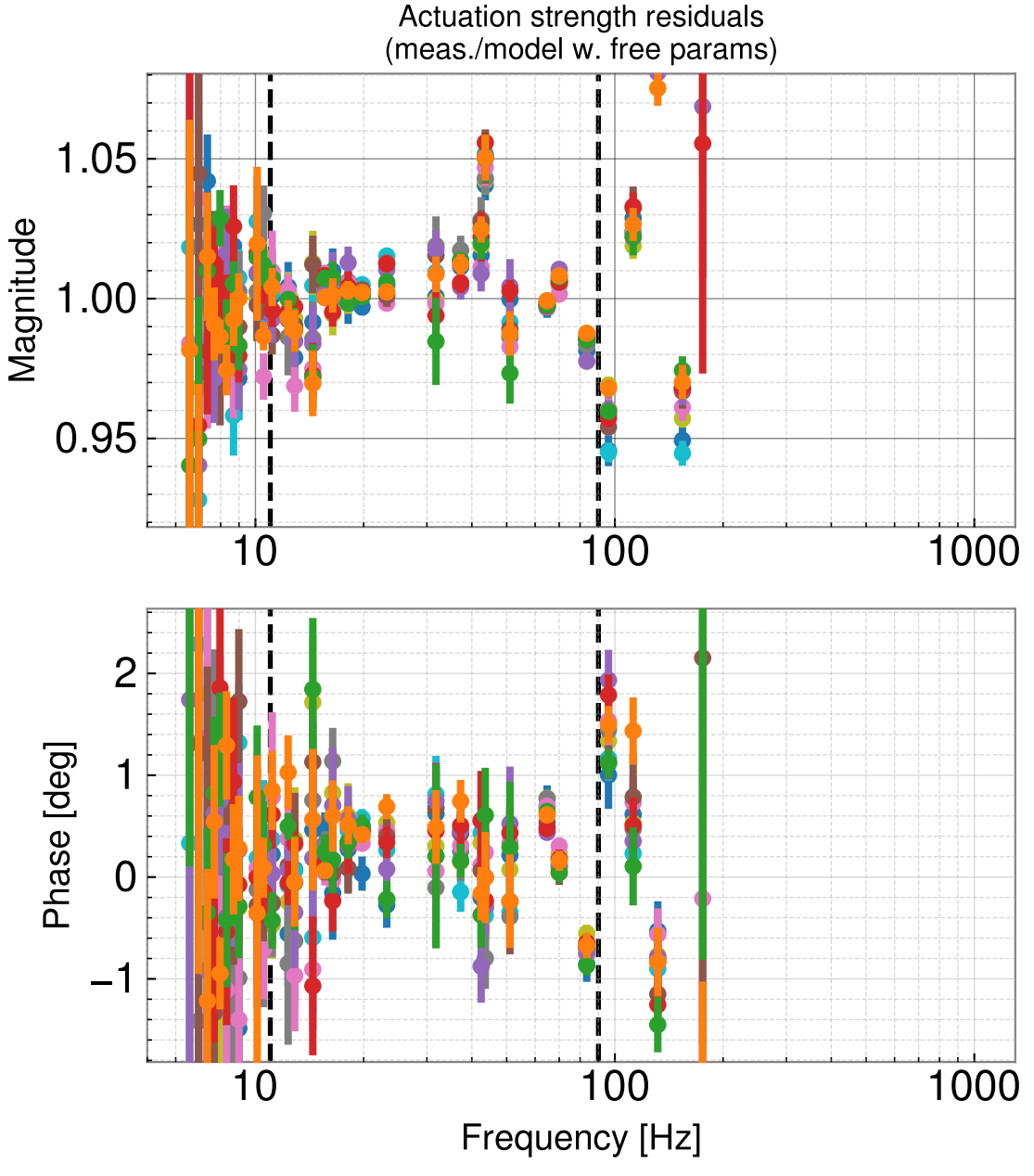


# H1SUSEX L1 actuation model history (last 9 measurements)

All fixed parameters drawn from /ligo/groups/cal/H1/reports/20250813T153820Z/pydarm_H1.ini

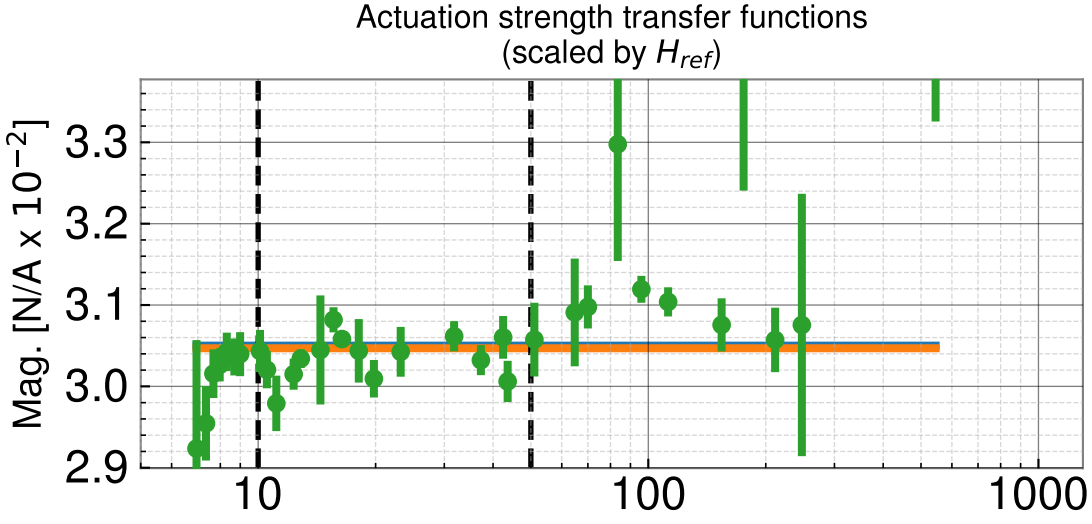
20250719T225835Z model
20250813T153848Z measurement
20250719T225903Z measurement
20250628T190710Z measurement
20250626T204238Z measurement
20250621T183614Z measurement
20250614T183710Z measurement
20250610T224037Z measurement
20250330T013352Z measurement
20250322T190720Z measurement
20250316T170731Z measurement
MCMC Fit Range: 11 Hz to 90 Hz

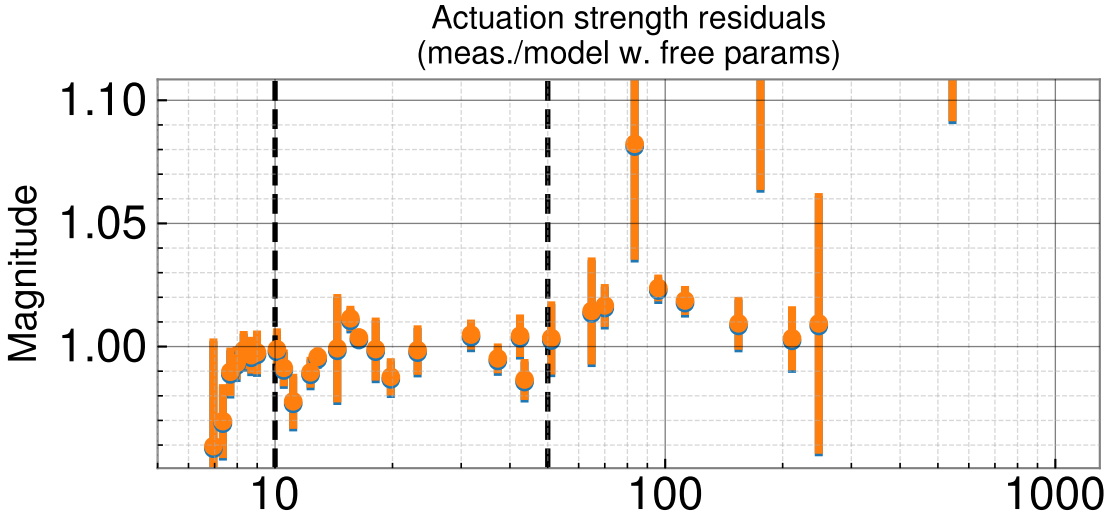


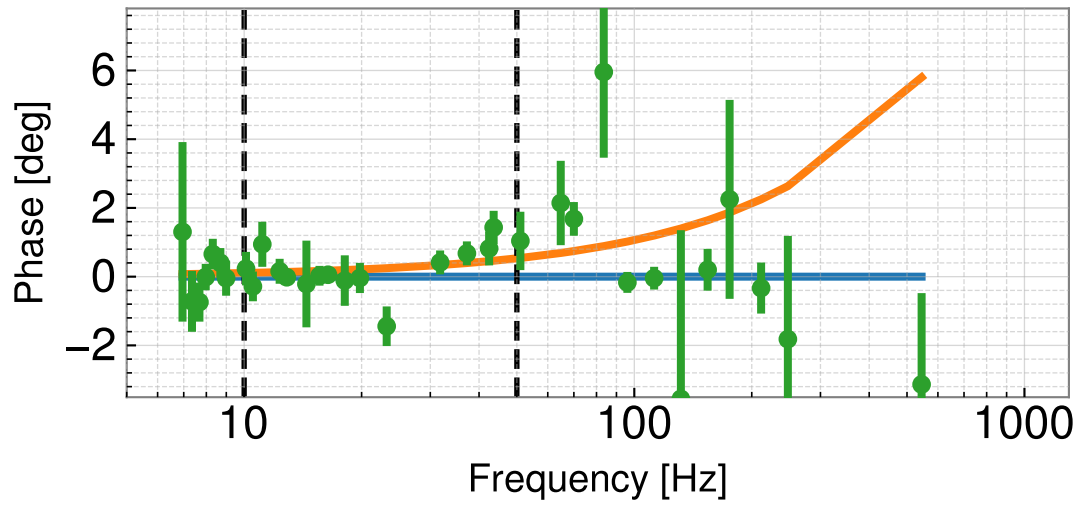



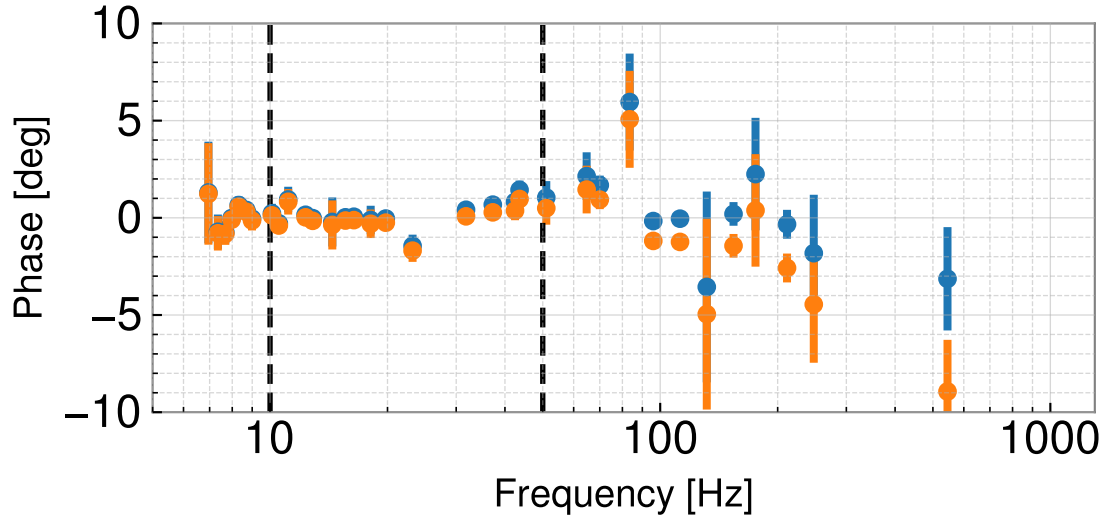
# H1SUSEX L2 actuation model MCMC summary

All fixed parameters drawn from /ligo/groups/cal/H1/reports/20250813T153820Z/pydarm_H1.ini

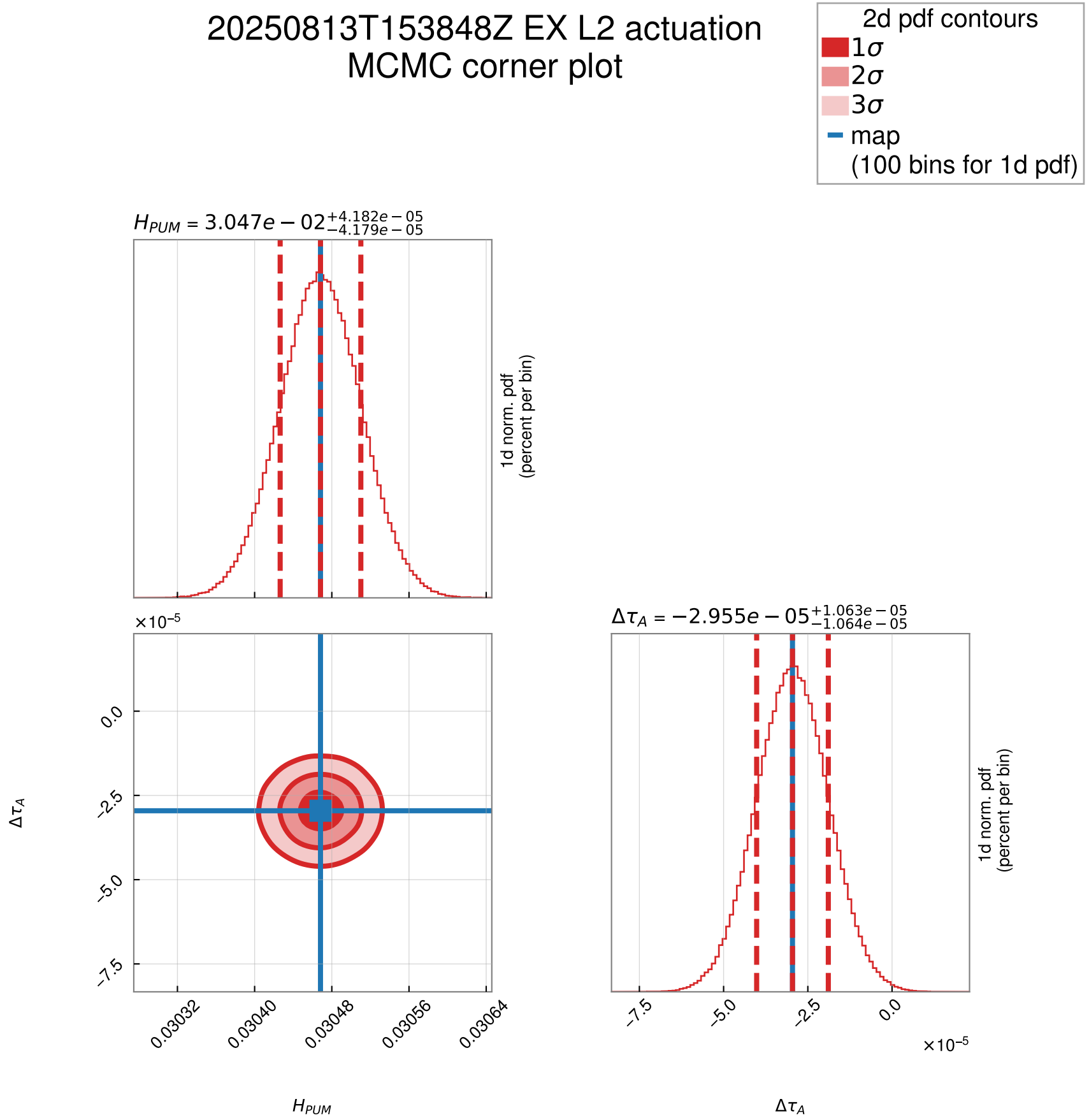




| Parameter (value +/-) | value | + | - |
|---|---|---|---|
| Actuation Gain, Hap (N/A) | 0.03047 | 4.182e-05 (0.14%) | 4.179e-05 (0.14%) |
| Residual time delay, tau_A (s) | -2.955e-05 | 1.063e-05 (-35.98%) | 1.064e-05 (-36.00%) |

# 20250813T153848Z EX L2 actuation
# MCMC corner plot

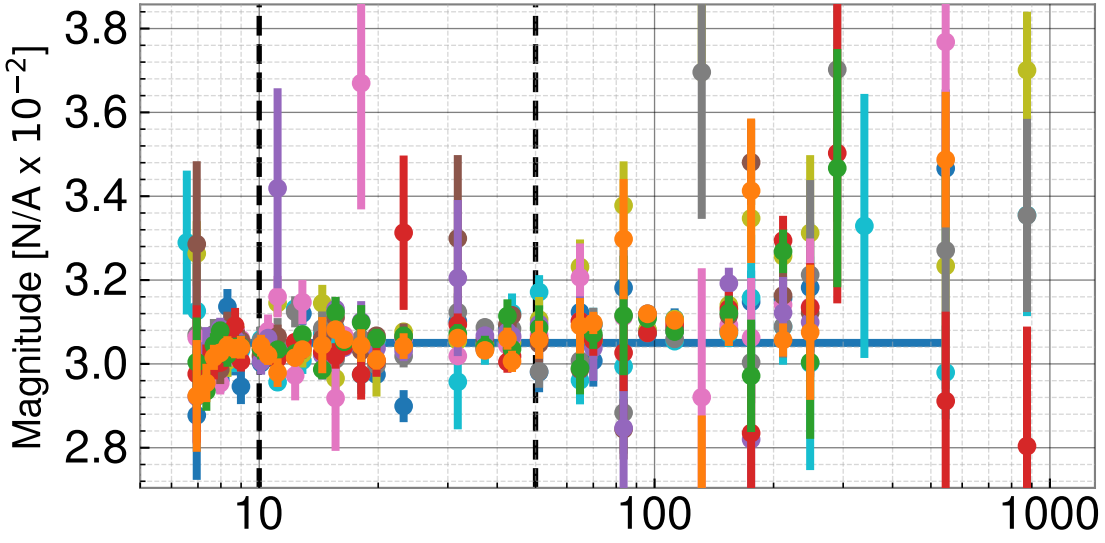


# H1SUSEX L2 actuation model history (last 9 measurements)

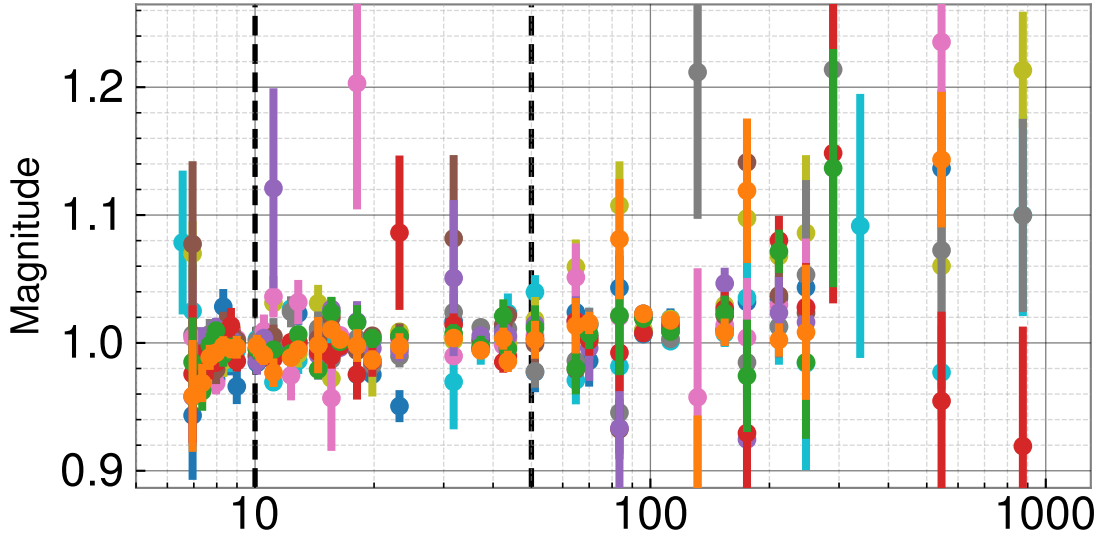
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20250813T153820Z/pydarm_H1.ini

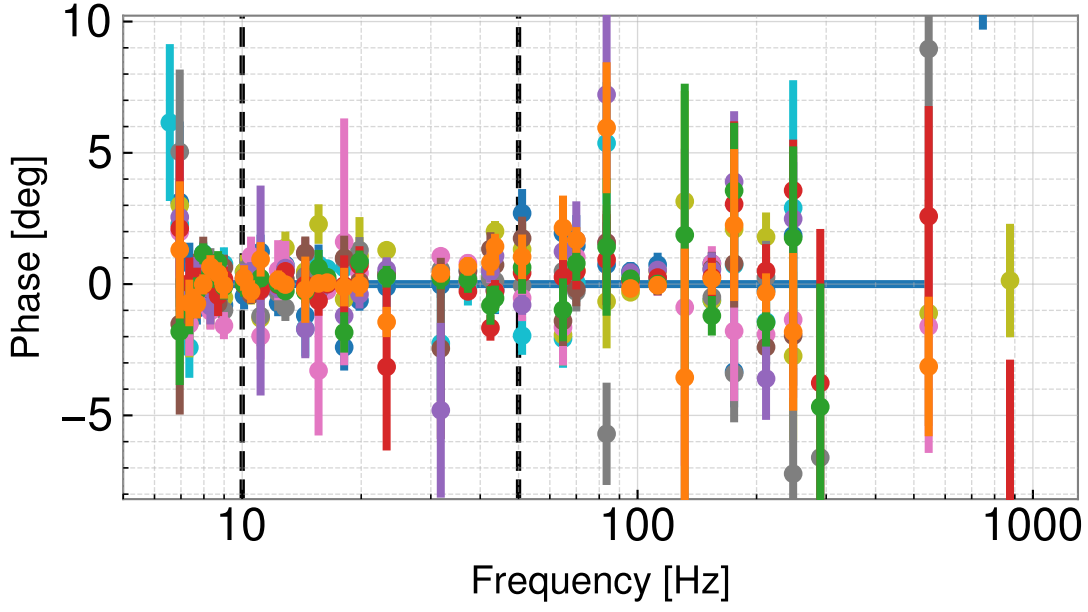
20250719T225835Z model
20250813T153848Z measurement
20250719T225903Z measurement
20250628T190710Z measurement
20250626T204238Z measurement
20250621T183614Z measurement
20250614T183710Z measurement
20250610T224037Z measurement
20250330T013352Z measurement
20250322T190720Z measurement
20250316T170731Z measurement
MCMC Fit Range: 10 Hz to 50 Hz

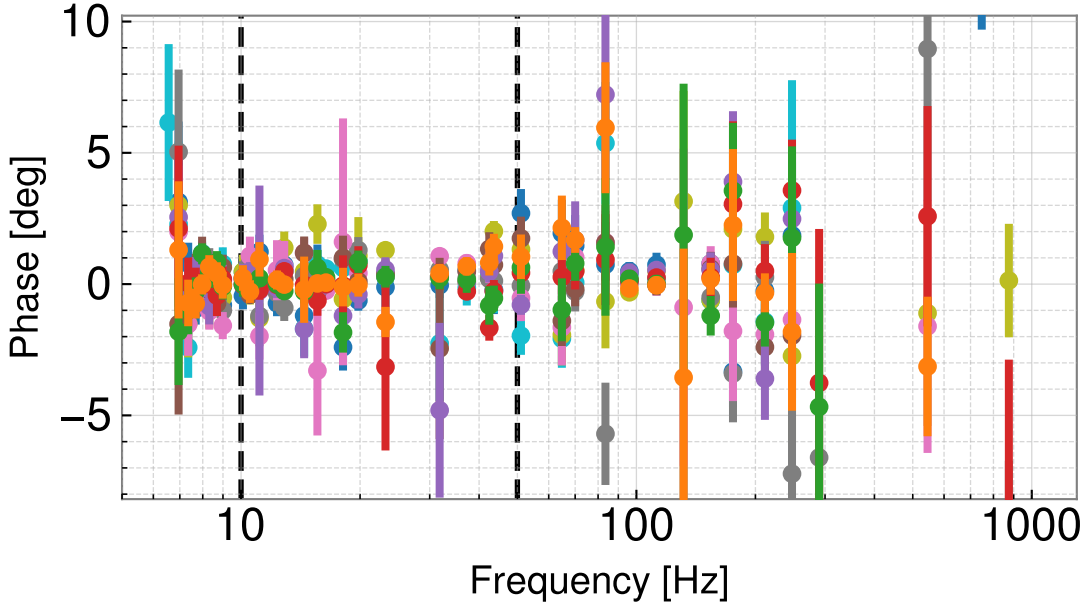
Actuation strength transfer functions
(scaled by $H_{ref}$)




Actuation strength residuals
(meas./model w. free params)

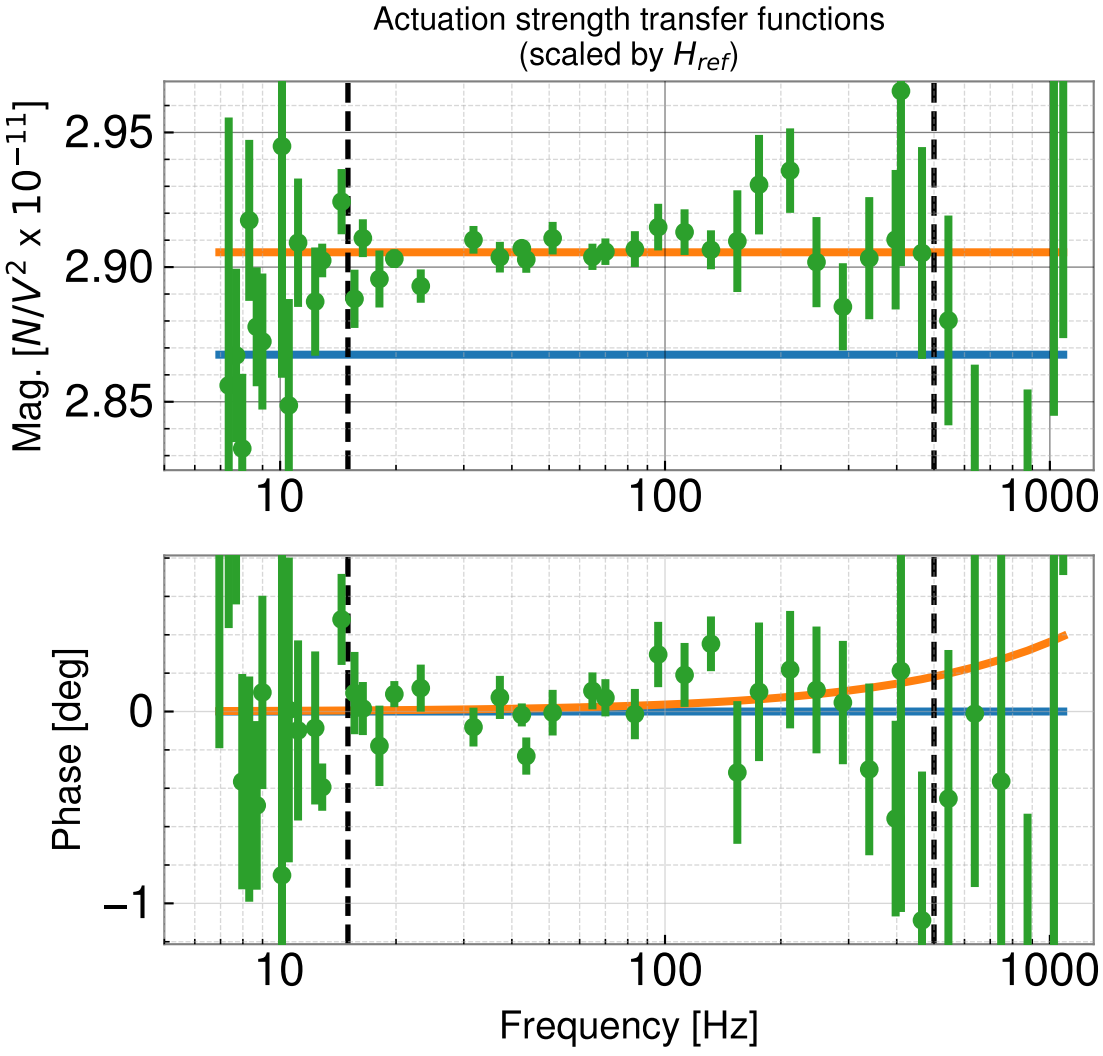


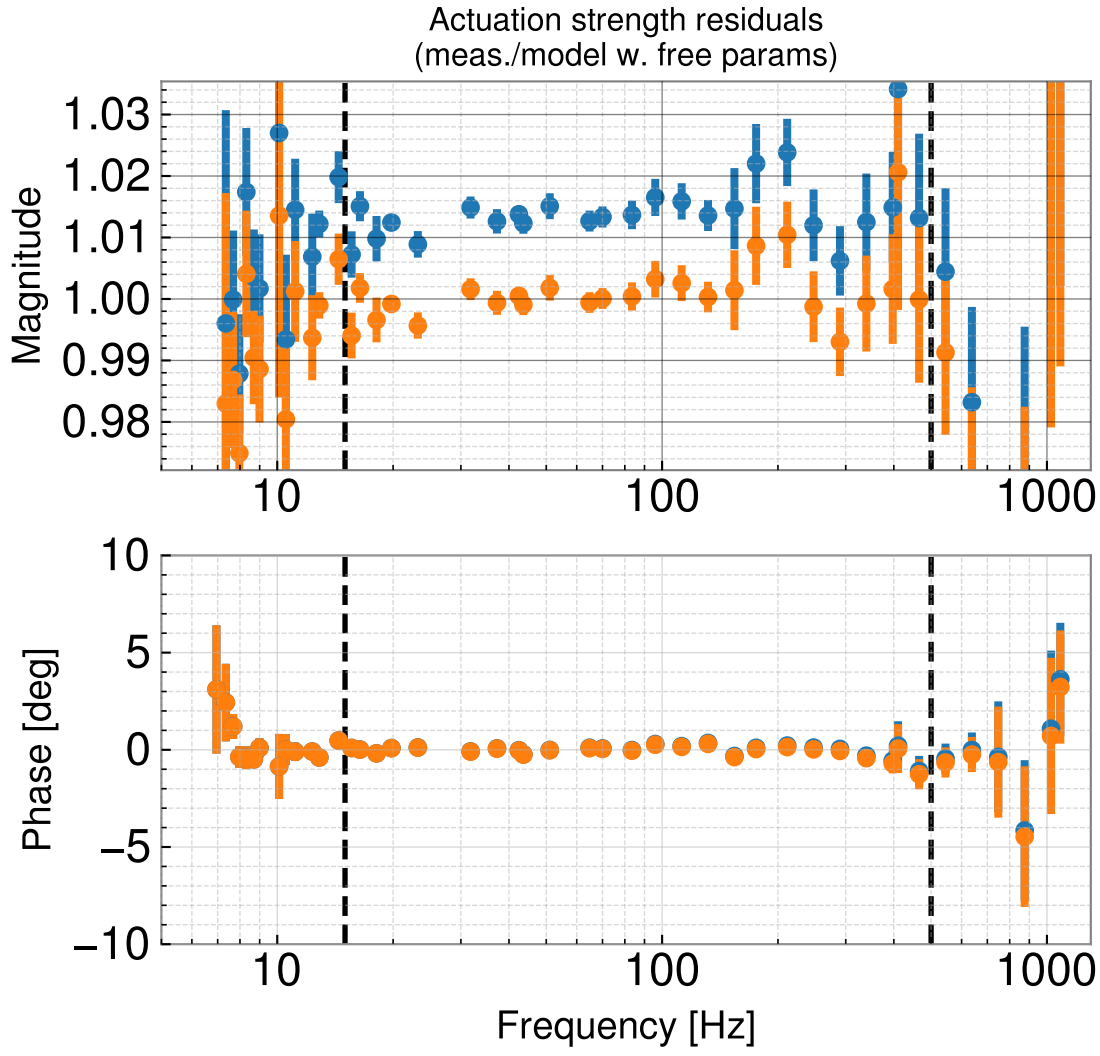



# H1SUSEX L3 actuation model MCMC summary

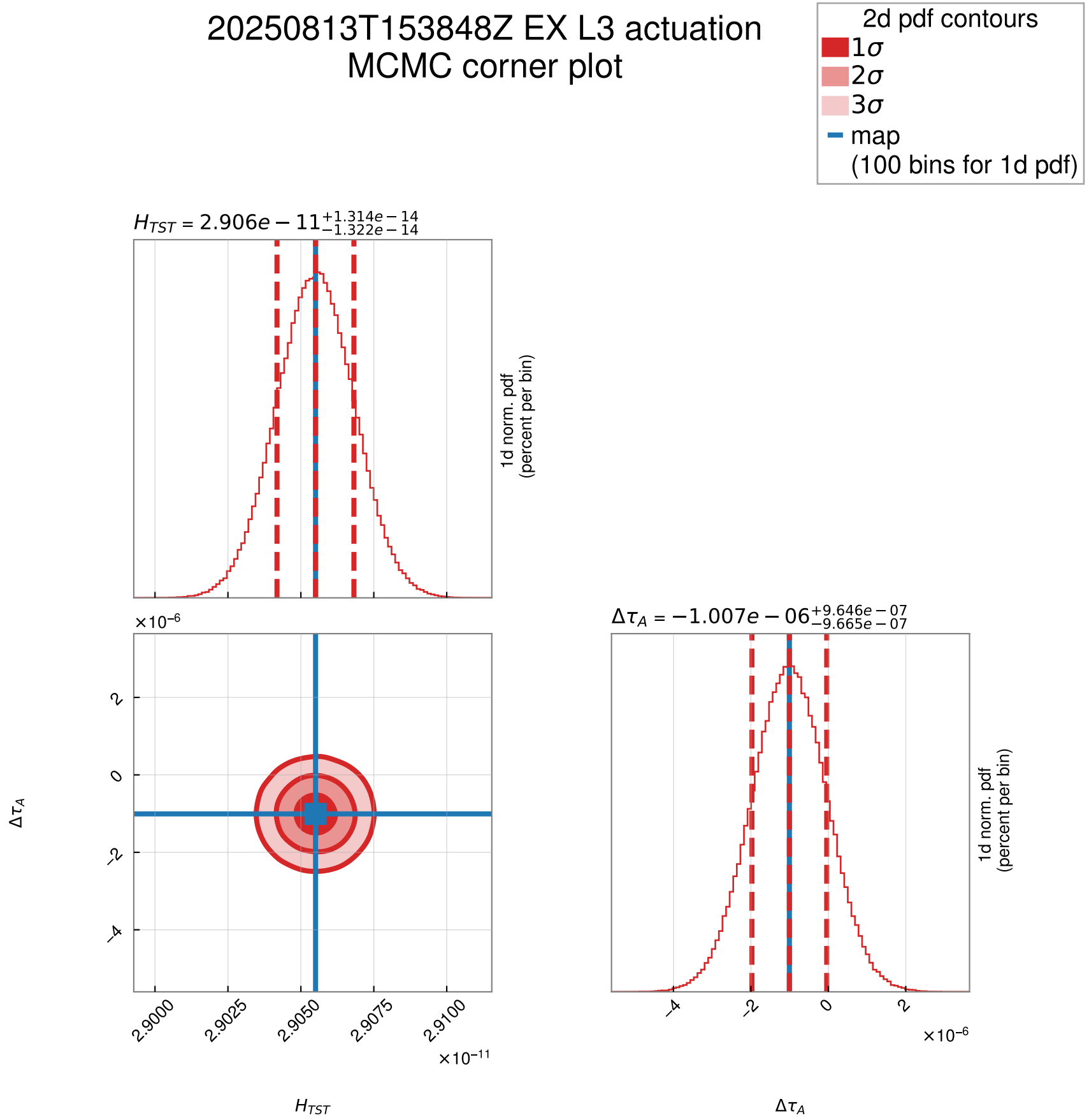
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20250813T153820Z/pydarm_H1.ini


| Parameter | (value +/-) | value | + | - |
|---|---|---|---|---|
| Actuation Gain, Hat (N/V**2) | | 2.906e-11 | 1.314e-14 (0.05%) | 1.322e-14 (0.05%) |
| Residual time delay, tau_A (s) | | -1.007e-06 | 9.646e-07 (-95.75%) | 9.665e-07 (-95.94%) |

# 20250813T153848Z EX L3 actuation
# MCMC corner plot

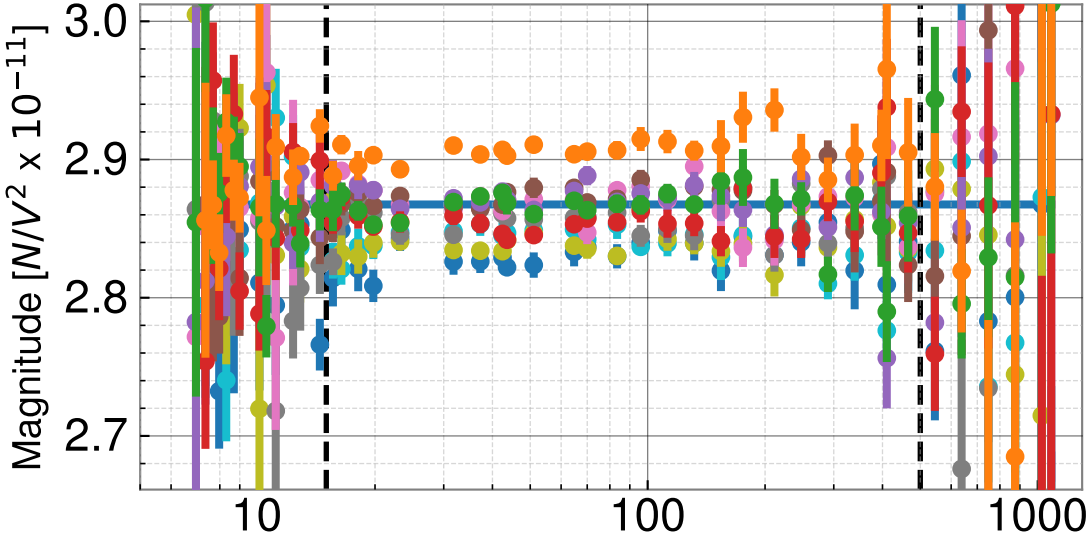


# H1SUSEX L3 actuation model history (last 9 measurements)

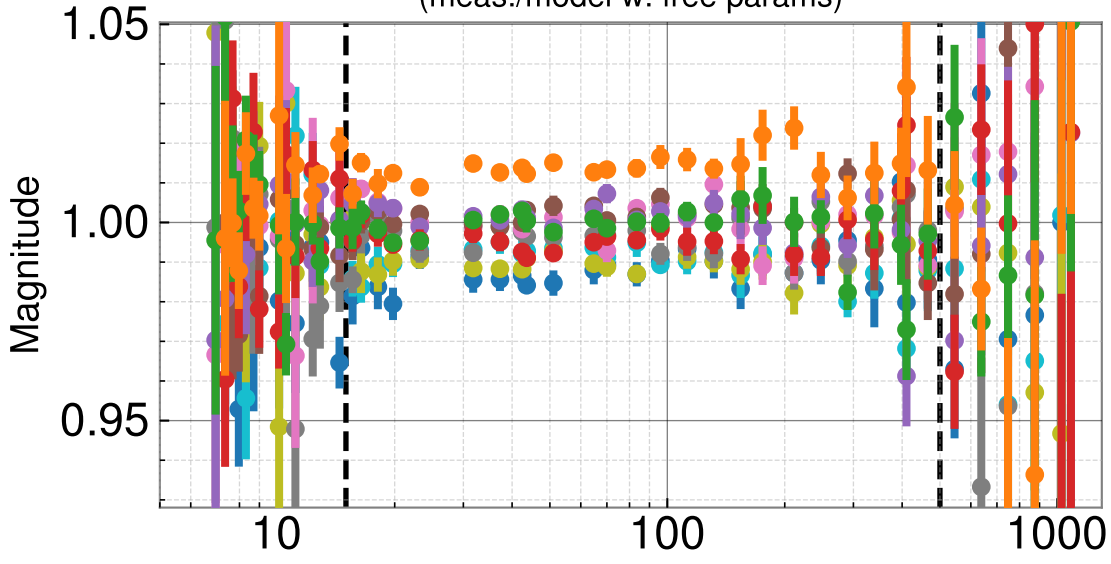
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20250813T153820Z/pydarm_H1.ini

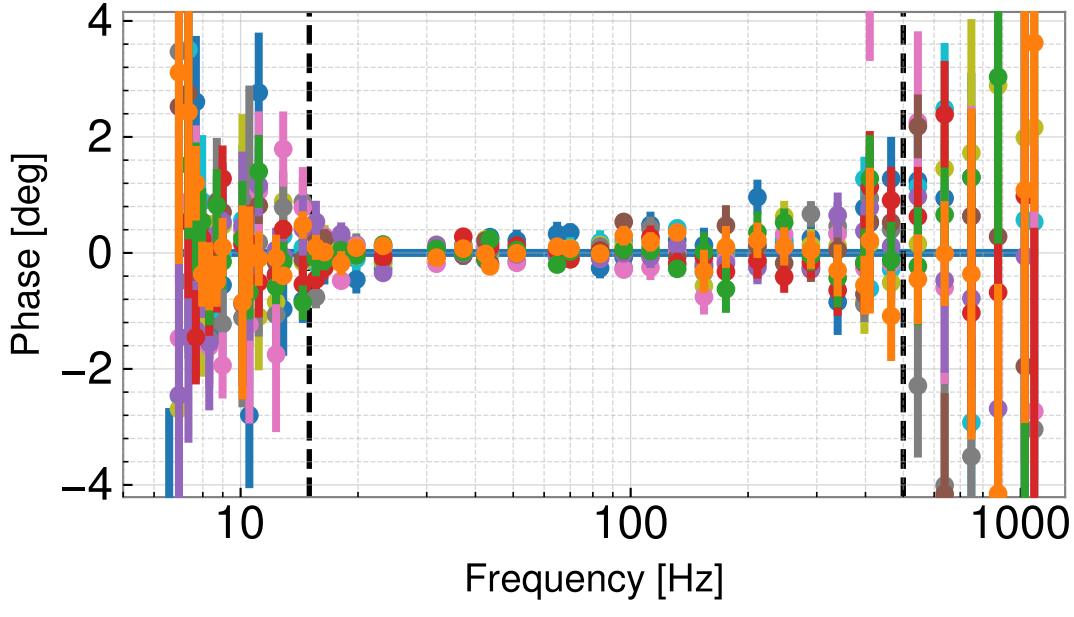
20250719T225835Z model
20250813T153848Z measurement
20250719T225903Z measurement
20250628T190710Z measurement
20250626T204238Z measurement
20250621T183614Z measurement
20250614T183710Z measurement
20250610T224037Z measurement
20250330T013353Z measurement
20250322T190720Z measurement
20250316T170731Z measurement
MCMC Fit Range: 15 Hz to 500 Hz

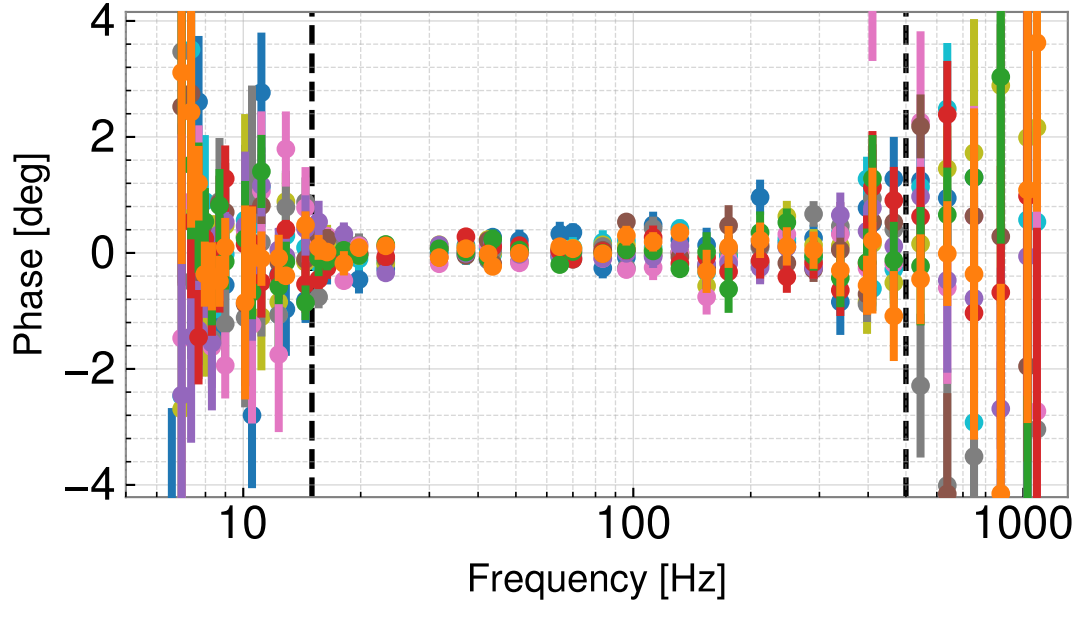
Actuation strength transfer functions
(scaled by $H_{ref}$)

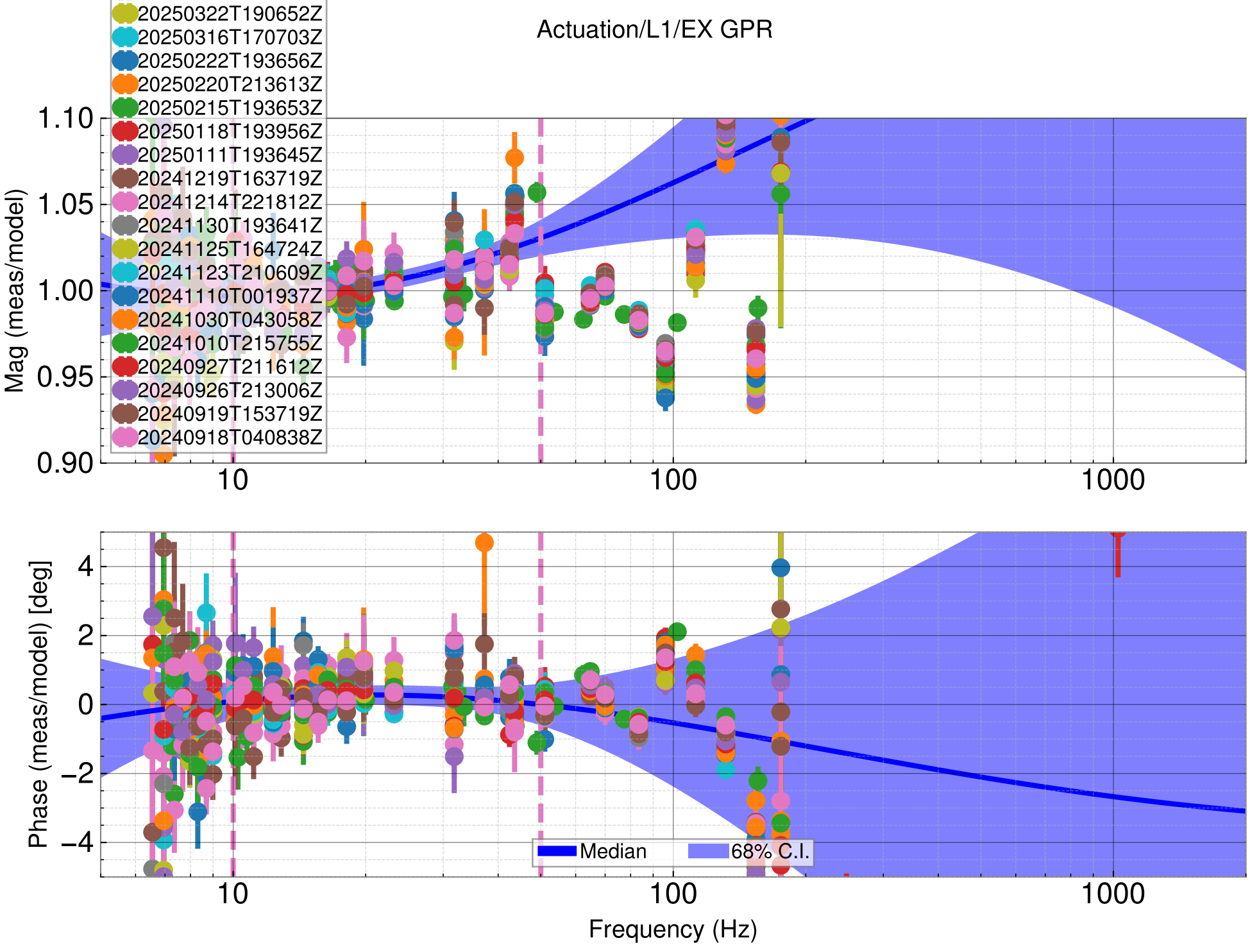


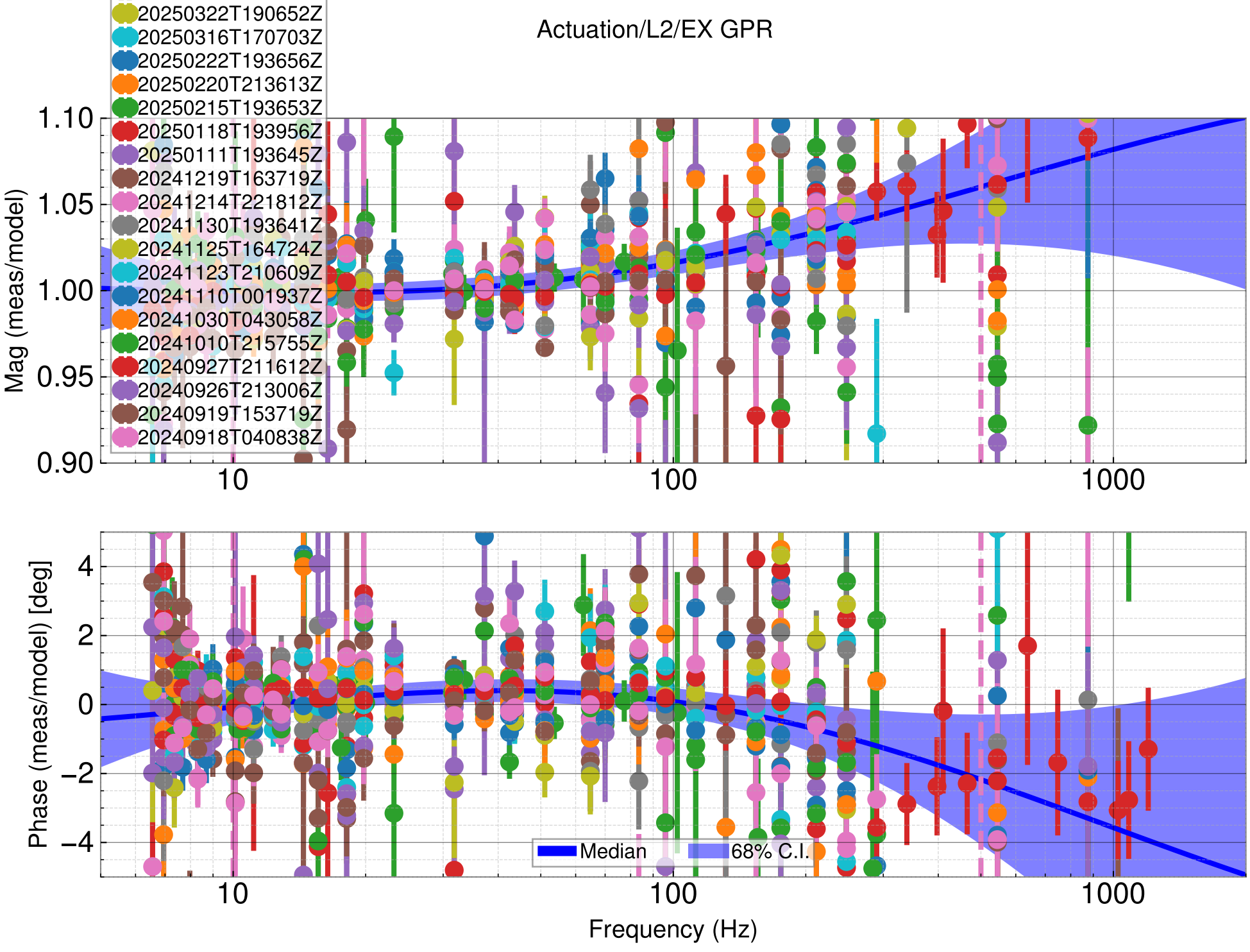

Actuation strength residuals
(meas./model w. free params)

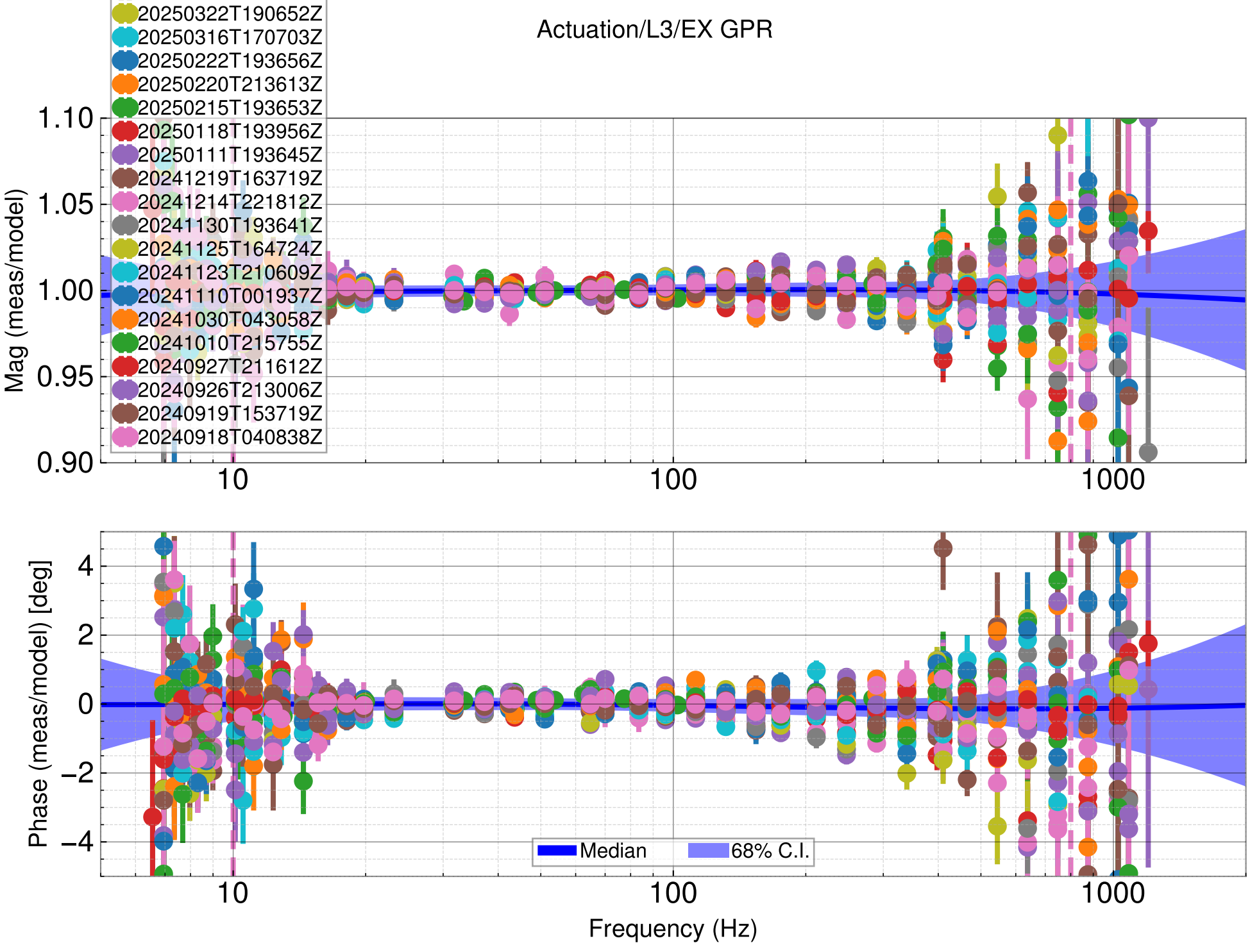


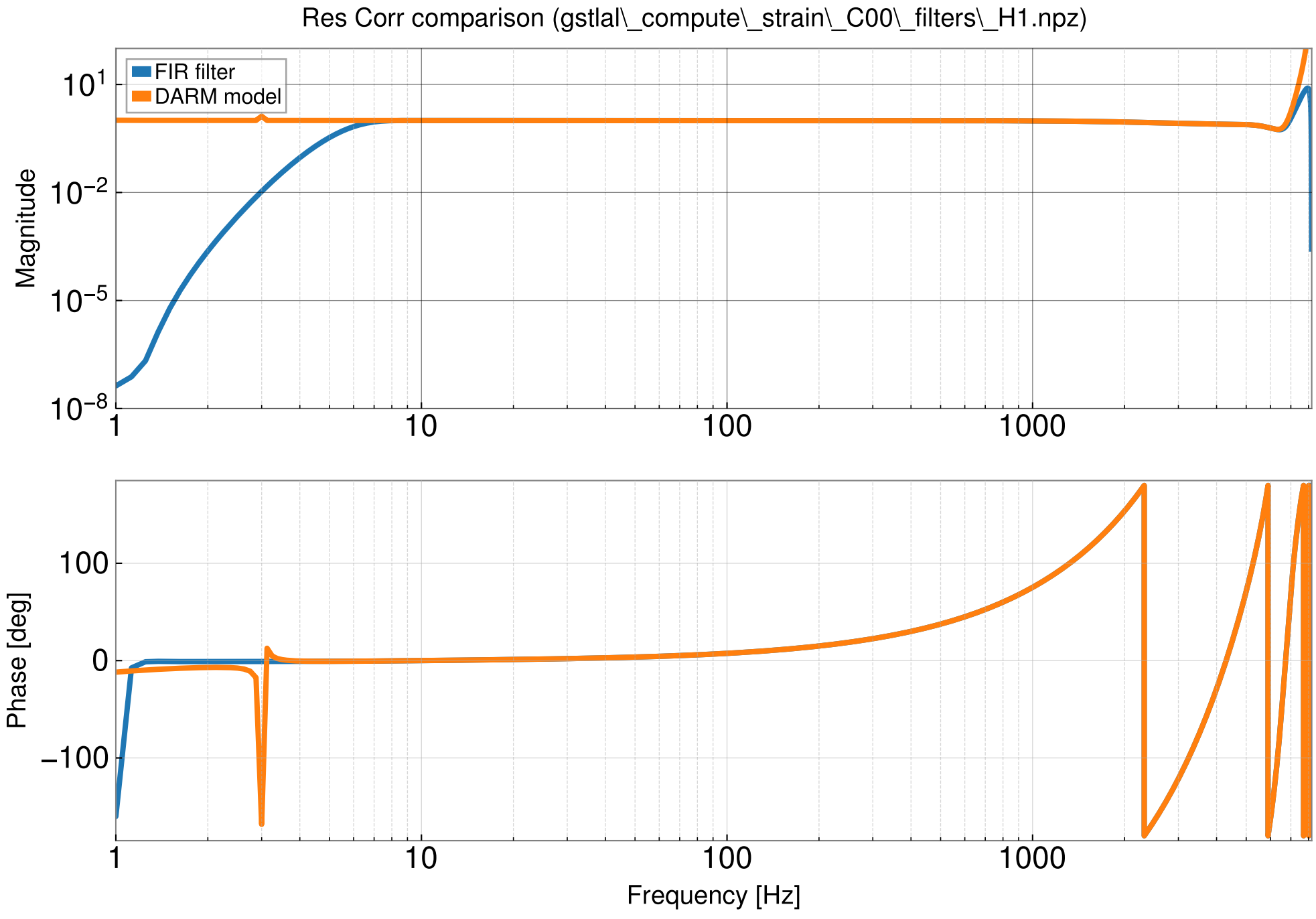



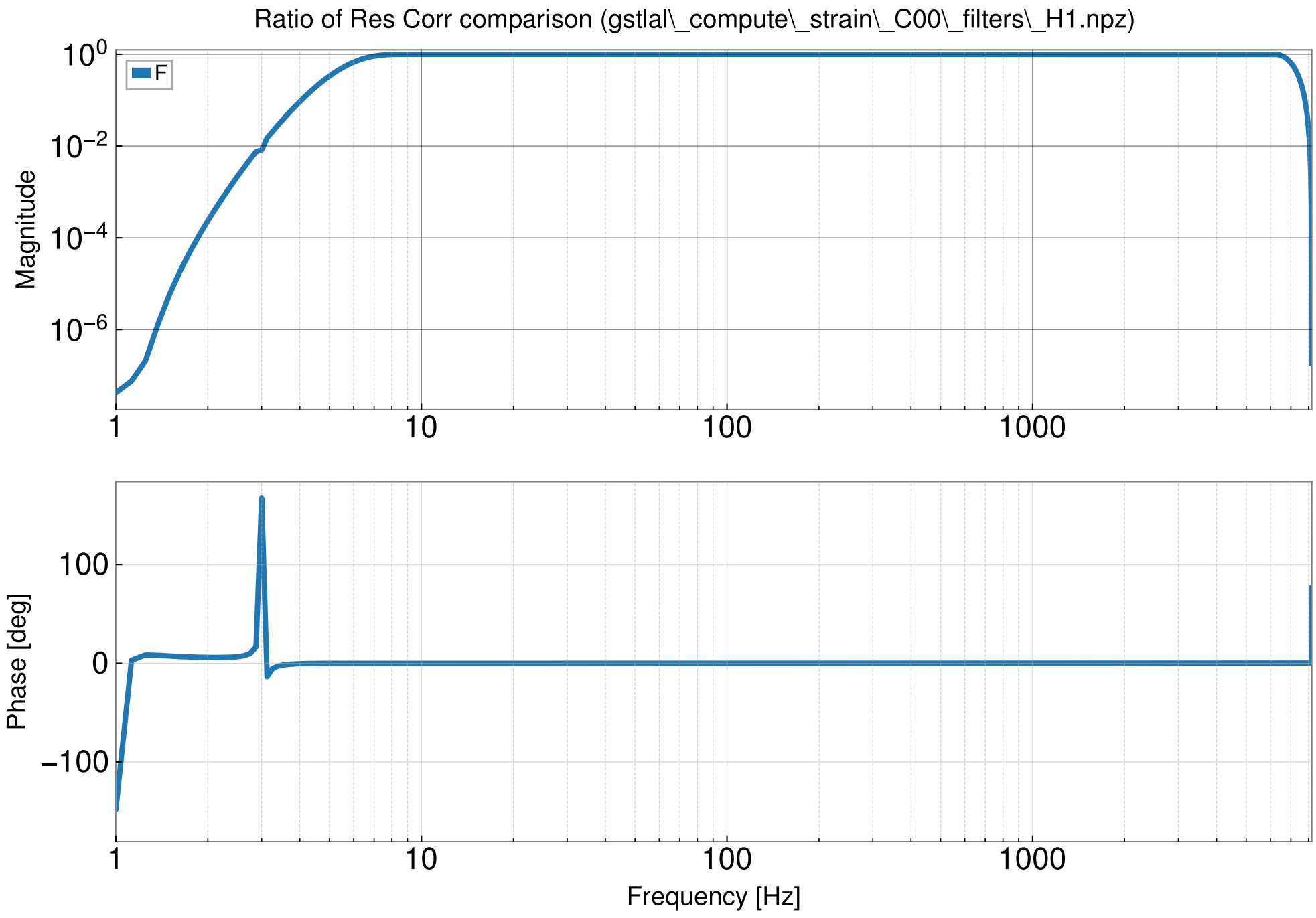



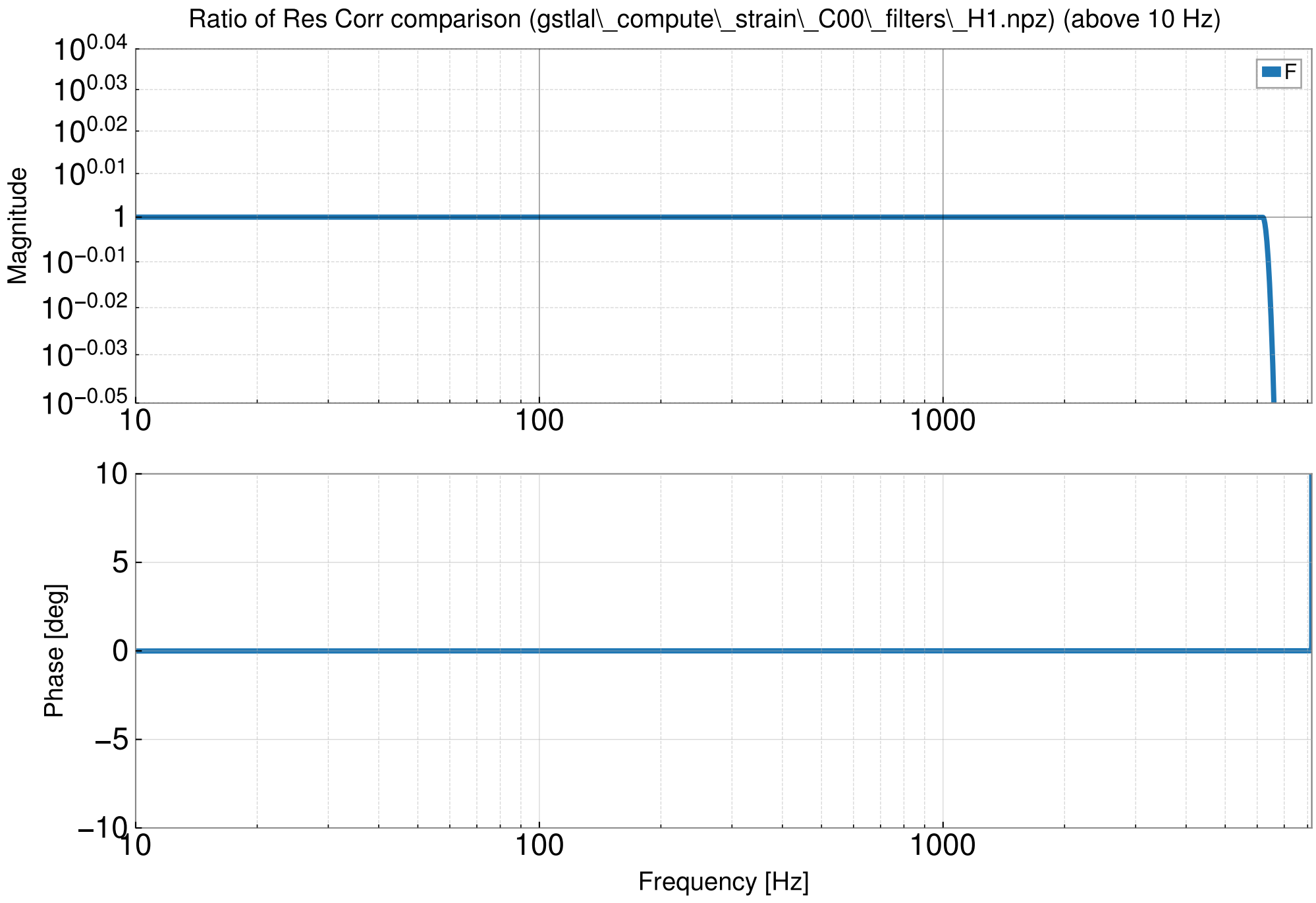

Actuation/L1/EX GPR
20250322T190652Z
20250316T170703Z
20250222T193656Z
20250220T213613Z
20250215T193653Z
20250118T193956Z
20250111T193645Z
20241219T163719Z
20241214T221812Z
20241130T193641Z
20241125T164724Z
20241123T210609Z
20241110T001937Z
20241030T043058Z
20241010T215755Z
20240927T211612Z
20240926T213006Z
20240919T153719Z
20240918T040838Z
Mag (meas/model)
1.10
1.05
1.00
0.95
0.90
10
100
1000
Phase (meas/model) [deg]
4
2
0
−2
−4
Median
68% C.I.
Frequency (Hz)

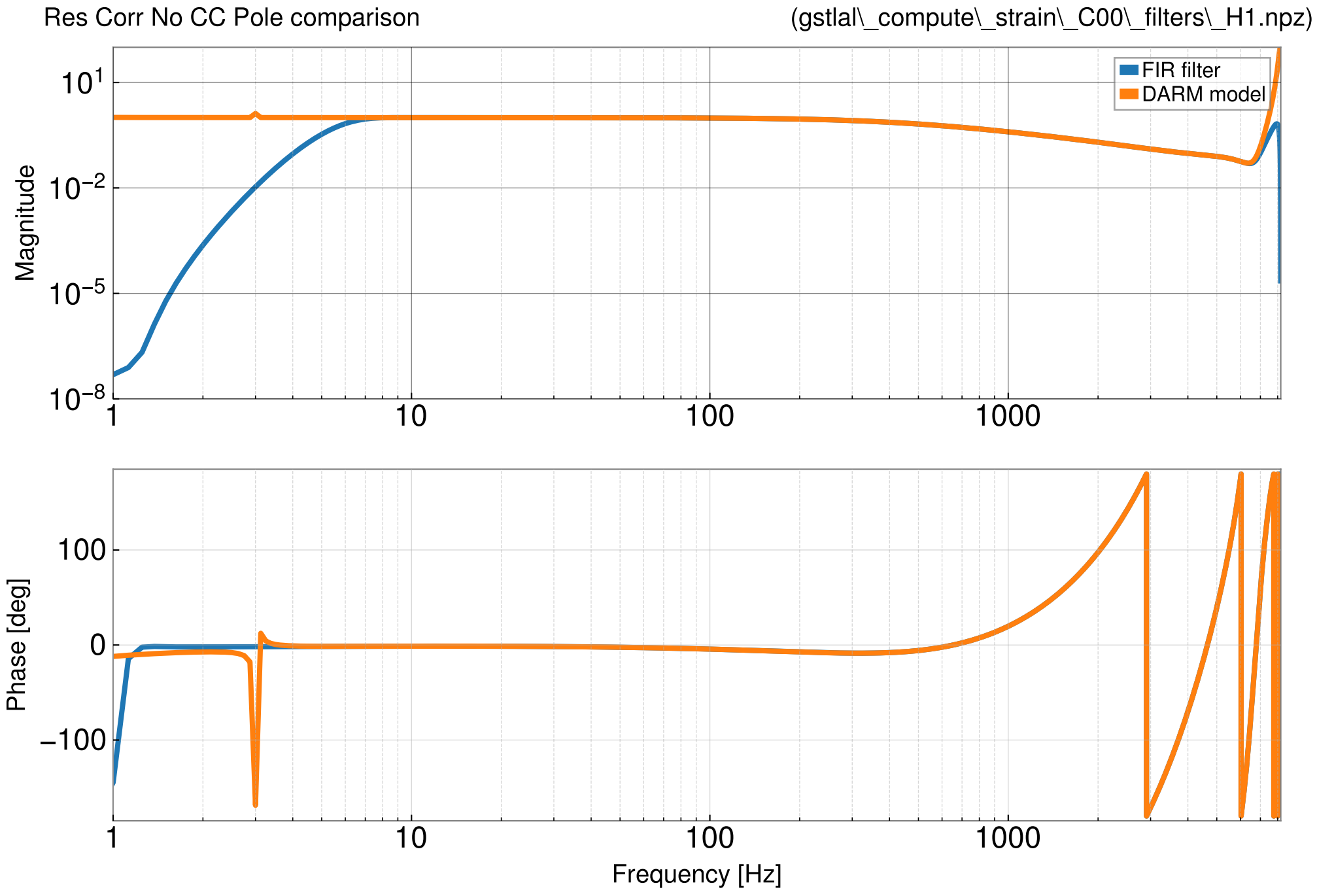

Actuation/L2/EX GPR
20250322T190652Z
20250316T170703Z
20250222T193656Z
20250220T213613Z
20250215T193653Z
20250118T193956Z
20250111T193645Z
20241219T163719Z
20241214T221812Z
20241130T193641Z
20241125T164724Z
20241123T210609Z
20241110T001937Z
20241030T043058Z
20241010T215755Z
20240927T211612Z
20240926T213006Z
20240919T153719Z
20240918T040838Z
Mag (meas/model)
1.10
1.05
1.00
0.95
0.90
10
100
1000
Phase (meas/model) [deg]
4
2
0
−2
−4
Median
68% C.I.
Frequency (Hz)

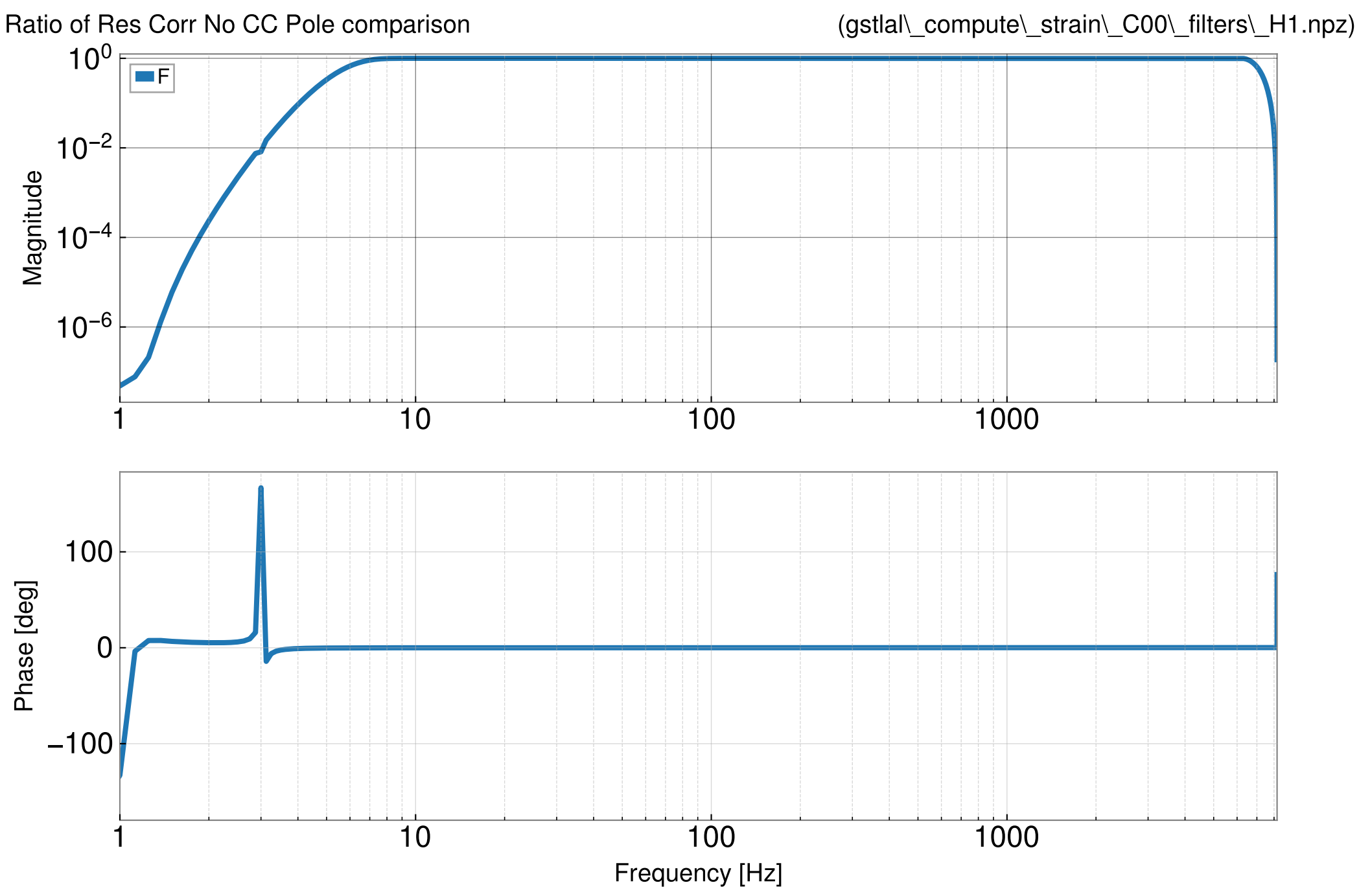

Actuation/L3/EX GPR
20250322T190652Z
20250316T170703Z
20250222T193656Z
20250220T213613Z
20250215T193653Z
20250118T193956Z
20250111T193645Z
20241219T163719Z
20241214T221812Z
20241130T193641Z
20241125T164724Z
20241123T210609Z
20241110T001937Z
20241030T043058Z
20241010T215755Z
20240927T211612Z
20240926T213006Z
20240919T153719Z
20240918T040838Z
Mag (meas/model)
1.10
1.05
1.00
0.95
0.90
10
100
1000
Phase (meas/model) [deg]
4
2
0
−2
−4
Median
68% C.I.
Frequency (Hz)

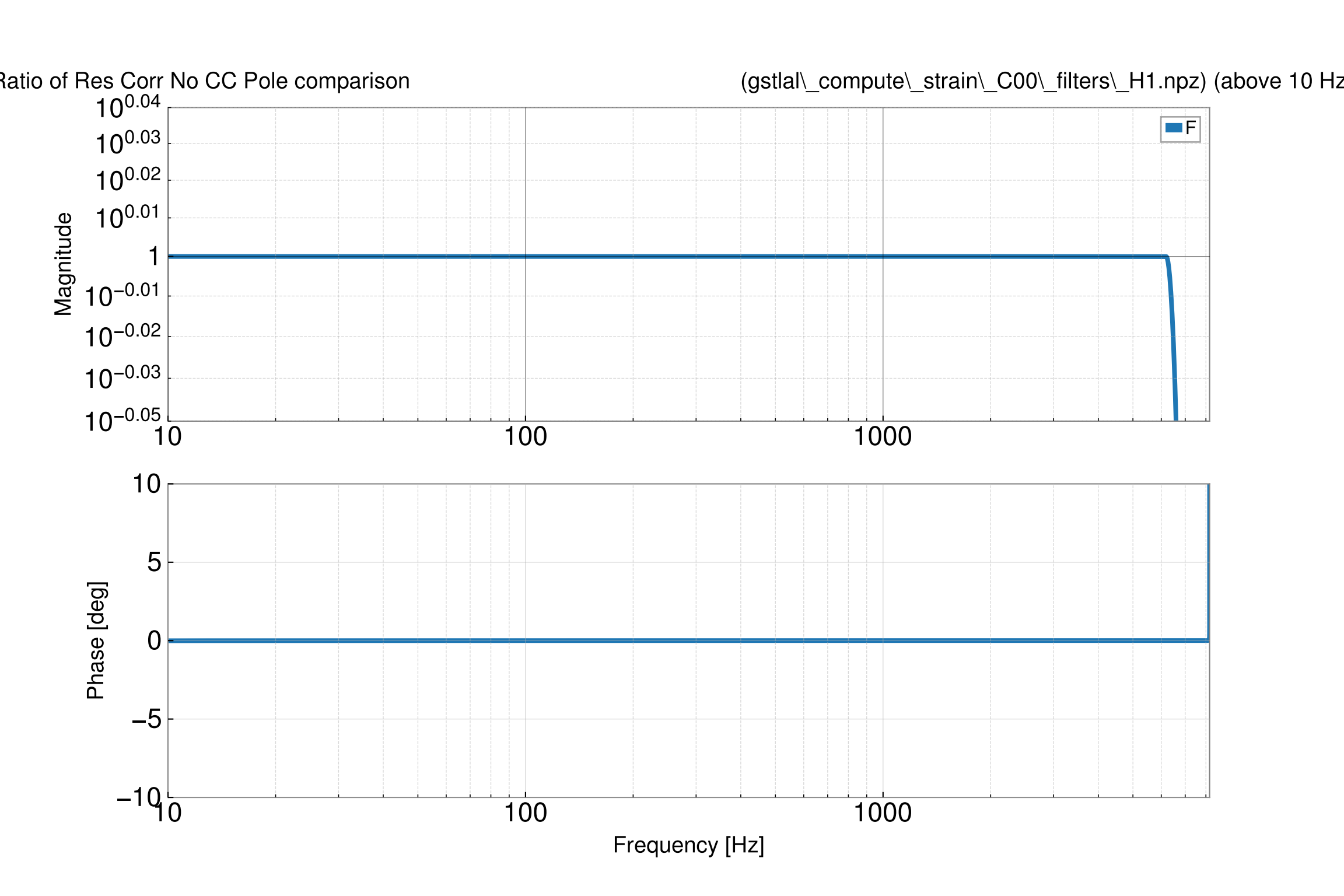

Res Corr comparison (gstlal_compute_strain_C00_filters_H1.npz)
FIR filter
DARM model
Magnitude
$10^{1}$
$10^{-2}$
$10^{-5}$
$10^{-8}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

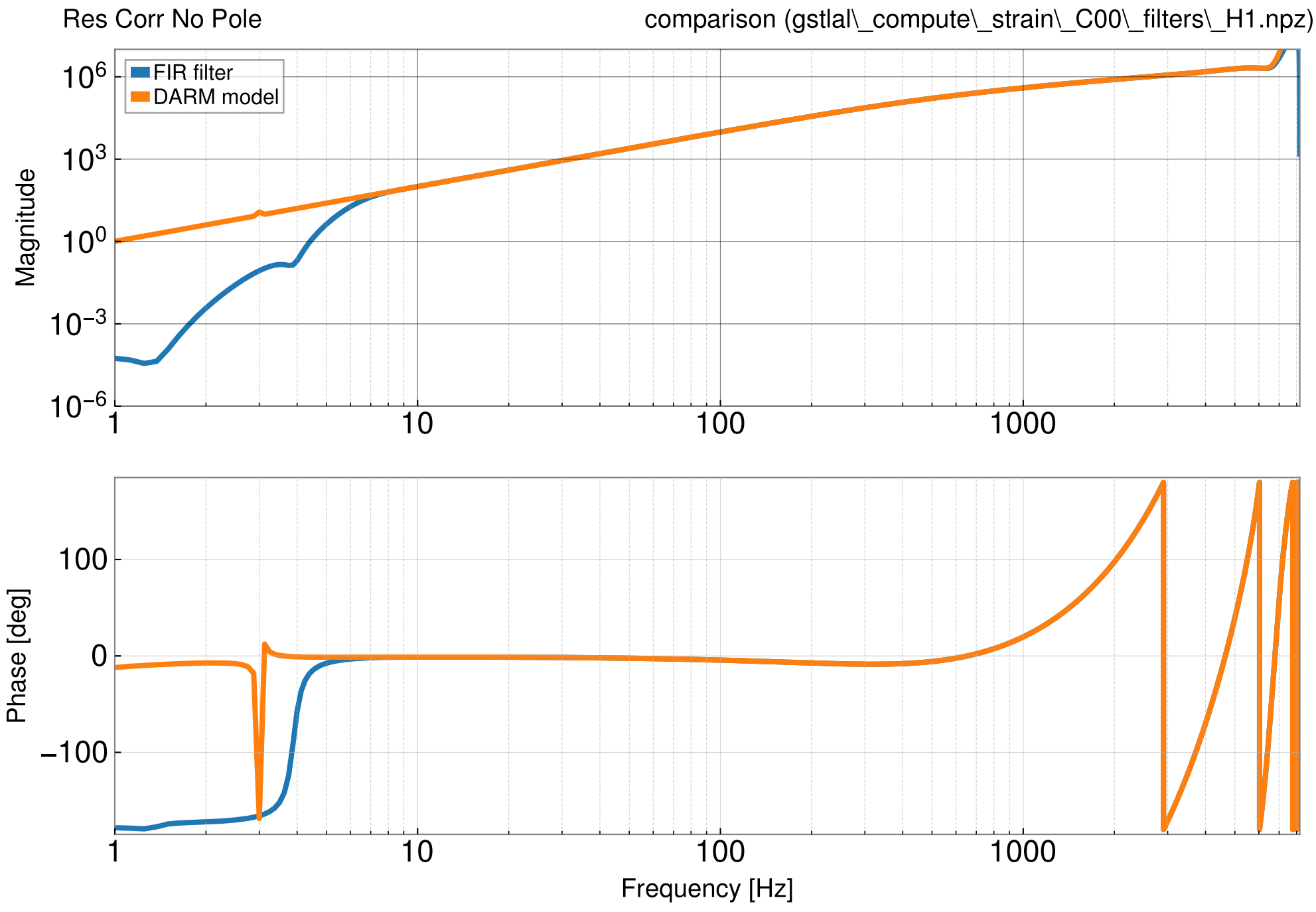

Ratio of Res Corr comparison (gstlal_compute_strain_C00_filters_H1.npz)
F
Magnitude
$10^{0}$
$10^{-2}$
$10^{-4}$
$10^{-6}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

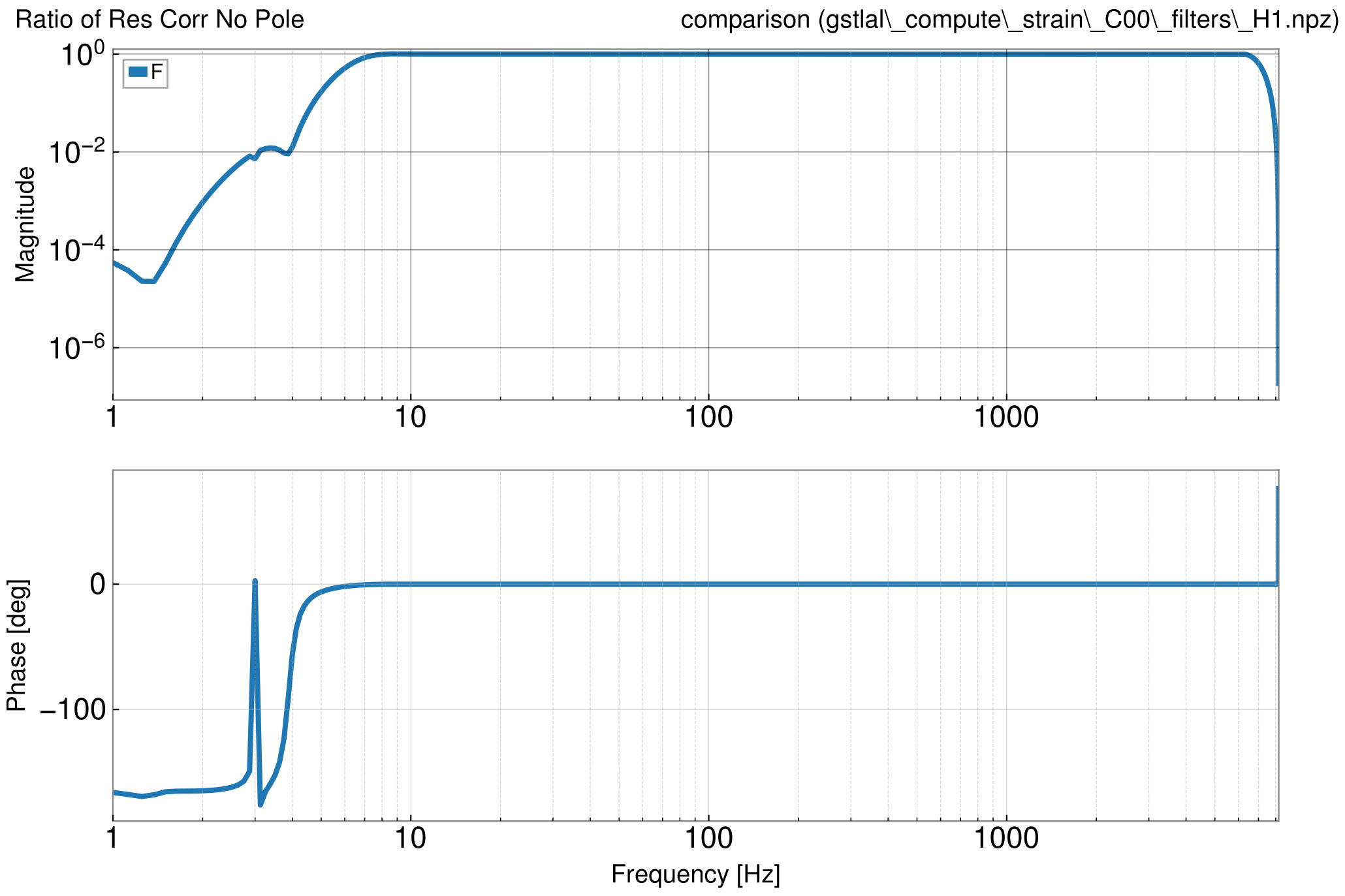

Ratio of Res Corr comparison (gstlal_compute_strain_C00_filters_H1.npz) (above 10 Hz)
Magnitude
$10^{0.04}$
$10^{0.03}$
$10^{0.02}$
$10^{0.01}$
1
$10^{-0.01}$
$10^{-0.02}$
$10^{-0.03}$
$10^{-0.05}$
F
10
100
1000
Phase [deg]
10
5
0
−5
−10
10
100
1000
Frequency [Hz]

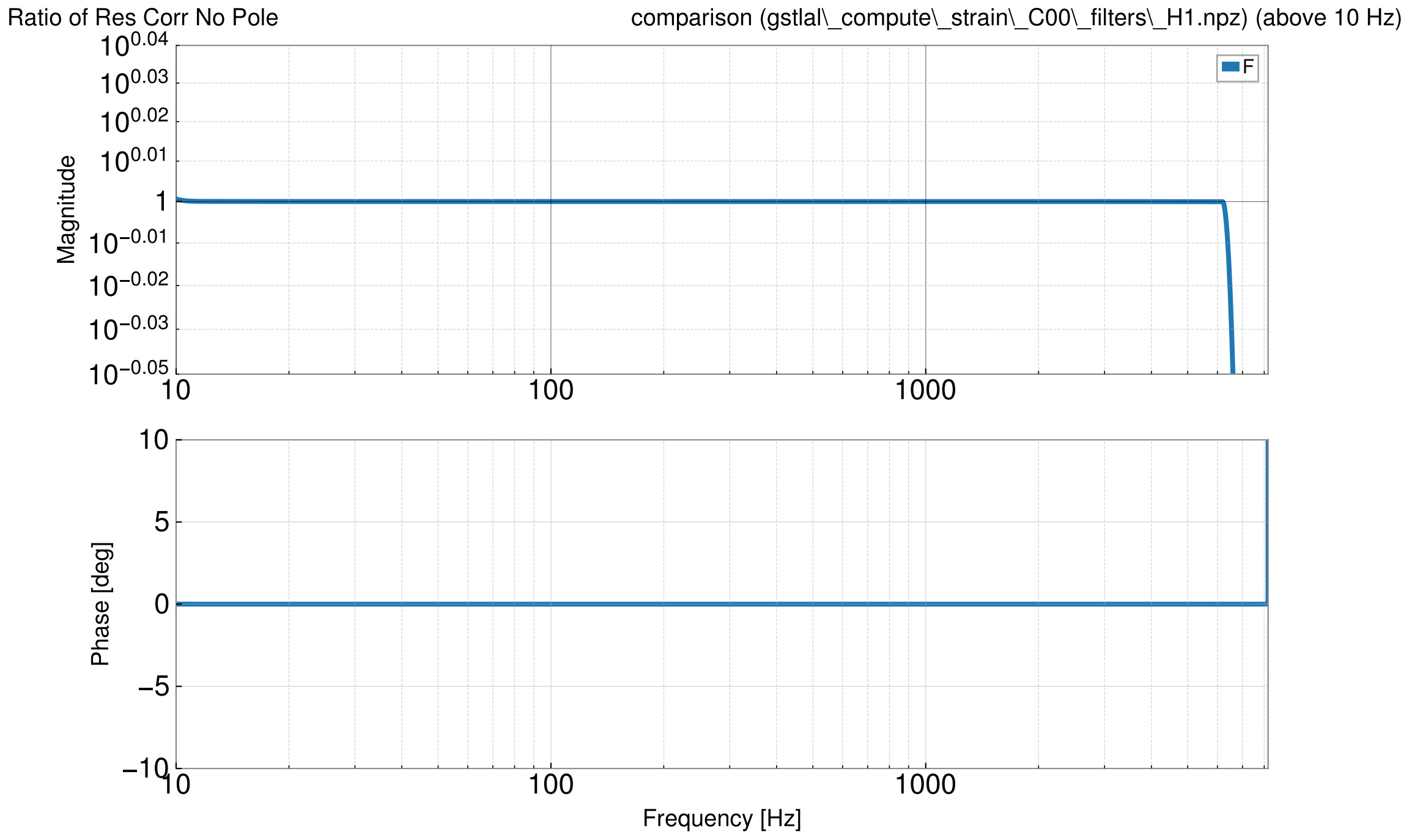

Res Corr No CC Pole comparison
(gstlal_compute_strain_C00_filters_H1.npz)
FIR filter
DARM model
Magnitude
$10^{1}$
$10^{-2}$
$10^{-5}$
$10^{-8}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

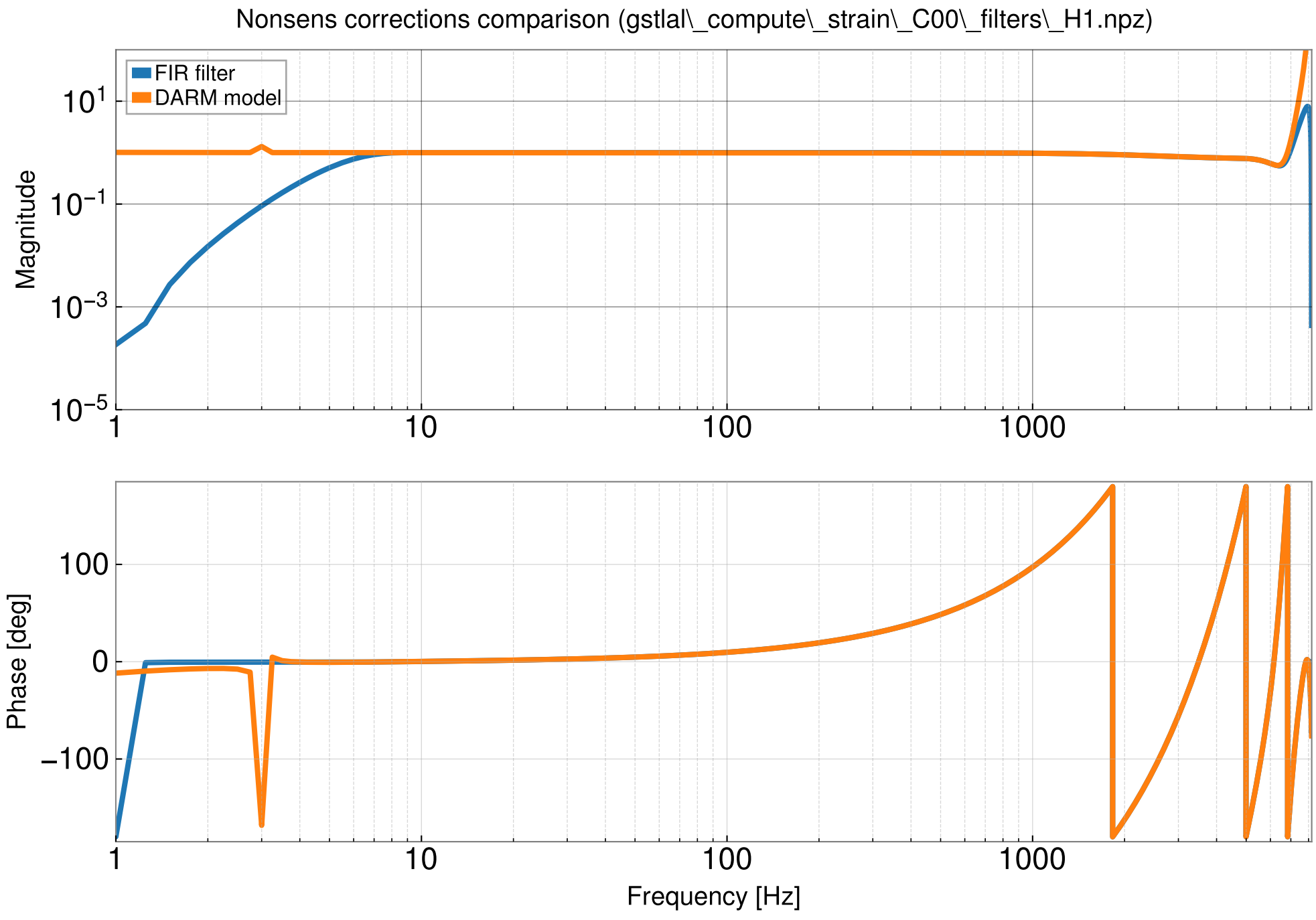

Ratio of Res Corr No CC Pole comparison
(gstlal_compute_strain_C00_filters_H1.npz)
F
Magnitude
$10^{0}$
$10^{-2}$
$10^{-4}$
$10^{-6}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

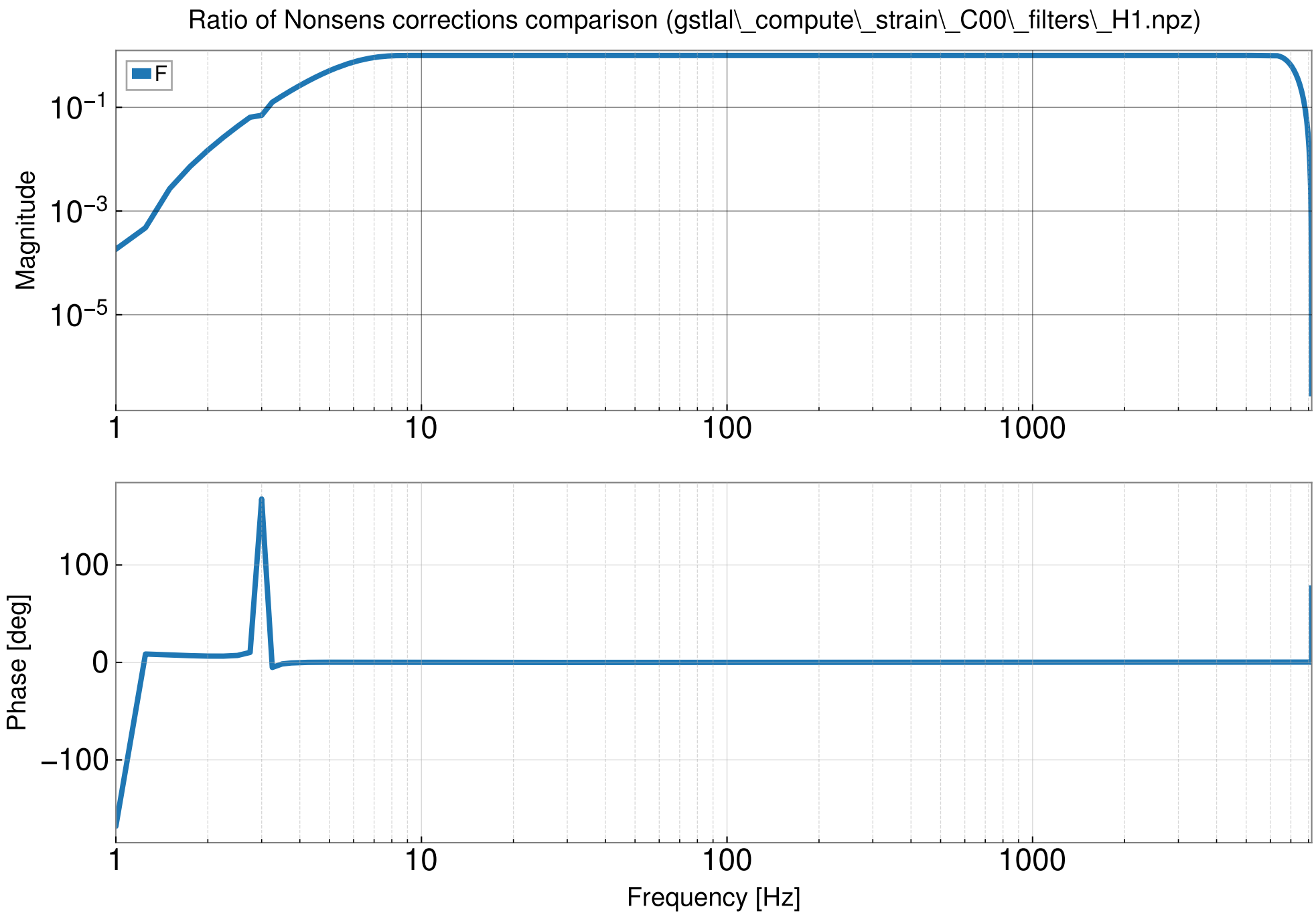

Ratio of Res Corr No CC Pole comparison
(gstlal_compute_strain_C00_filters_H1.npz) (above 10 Hz
F
Magnitude
$10^{0.04}$
$10^{0.03}$
$10^{0.02}$
$10^{0.01}$
1
$10^{-0.01}$
$10^{-0.02}$
$10^{-0.03}$
$10^{-0.05}$
10
100
1000
Phase [deg]
10
5
0
−5
−10
10
100
1000
Frequency [Hz]

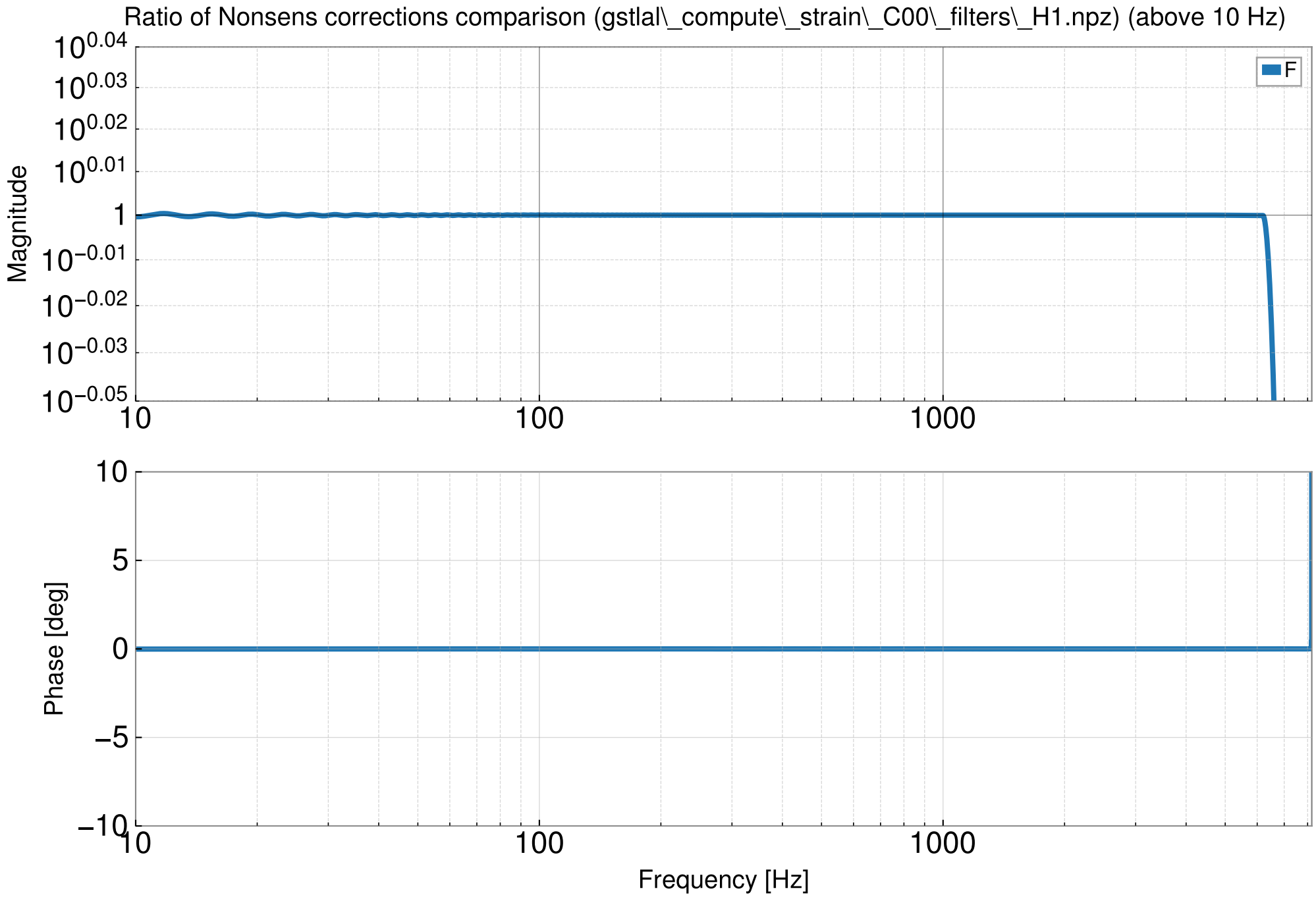

Res Corr No Pole
comparison (gstlal_compute_strain_C00_filters_H1.npz)
FIR filter
DARM model
Magnitude
$10^6$
$10^3$
$10^0$
$10^{-3}$
$10^{-6}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

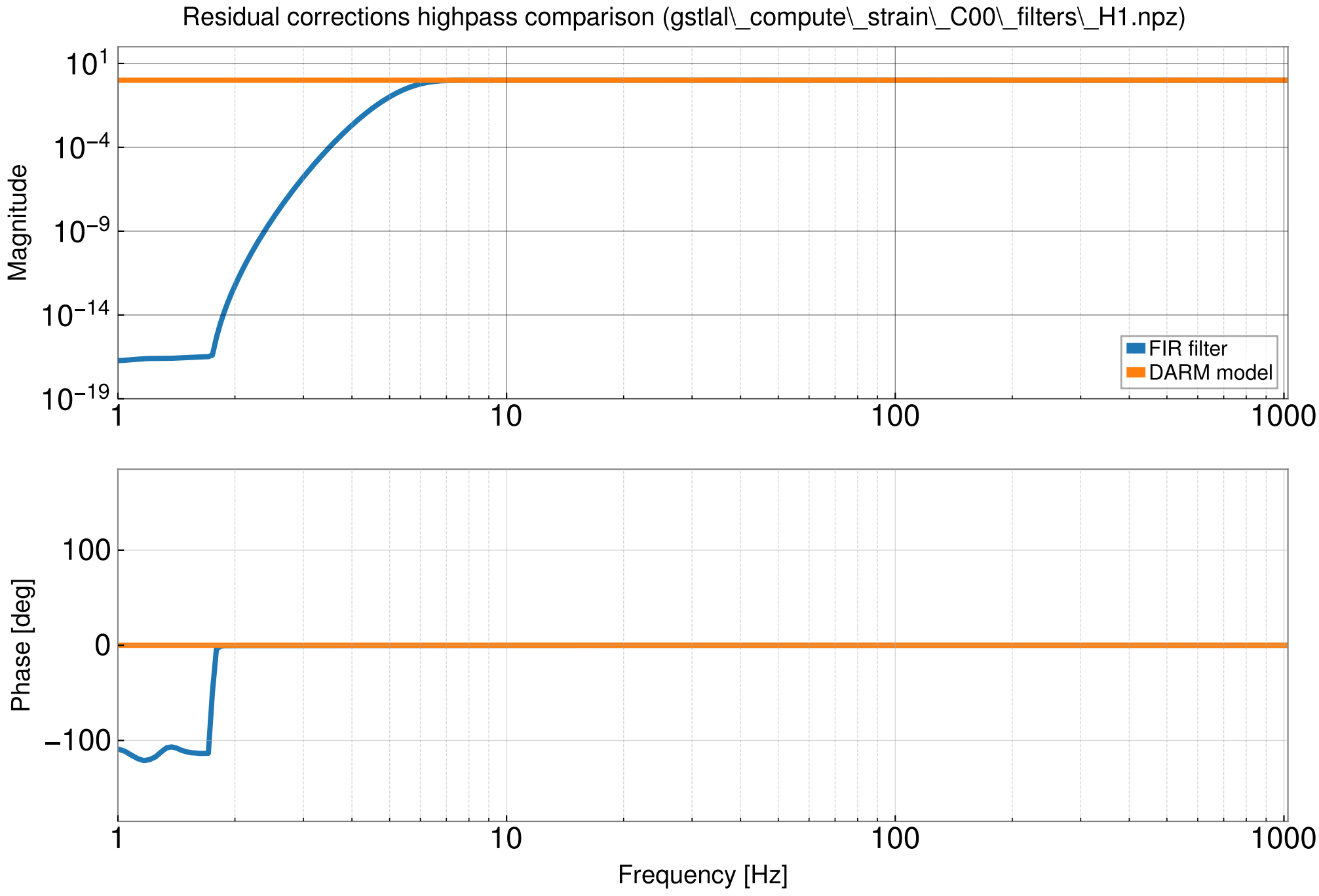

Ratio of Res Corr No Pole
comparison (gstlal_compute_strain_C00_filters_H1.npz)
F
Magnitude
$10^{0}$
$10^{-2}$
$10^{-4}$
$10^{-6}$
1
10
100
1000
Phase [deg]
0
−100
1
10
100
1000
Frequency [Hz]

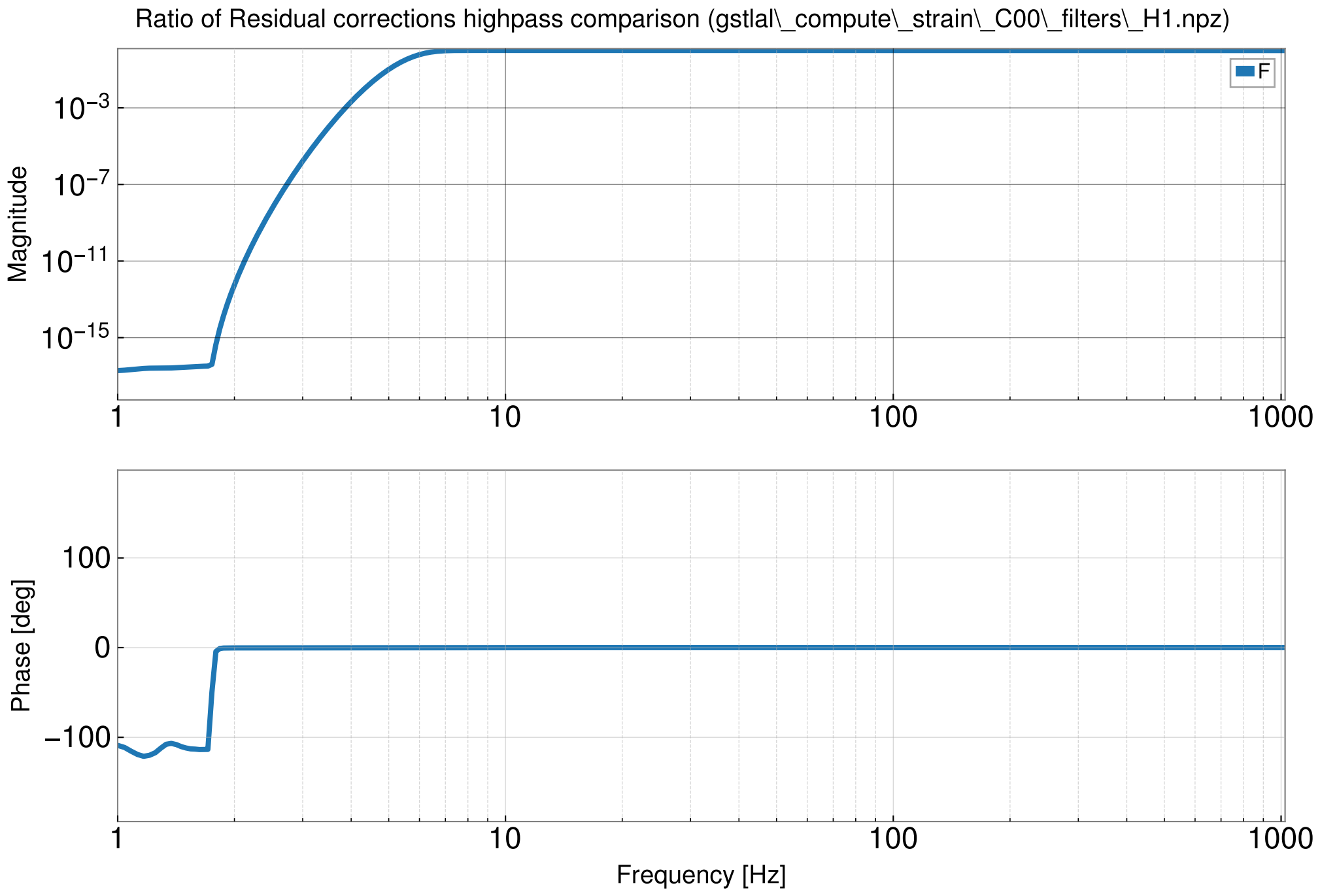

Ratio of Res Corr No Pole
comparison (gstlal_compute_strain_C00_filters_H1.npz) (above 10 Hz)
F
Magnitude
$10^{0.04}$
$10^{0.03}$
$10^{0.02}$
$10^{0.01}$
1
$10^{-0.01}$
$10^{-0.02}$
$10^{-0.03}$
$10^{-0.05}$
10
100
1000
Phase [deg]
10
5
0
−5
−10
10
100
1000
Frequency [Hz]

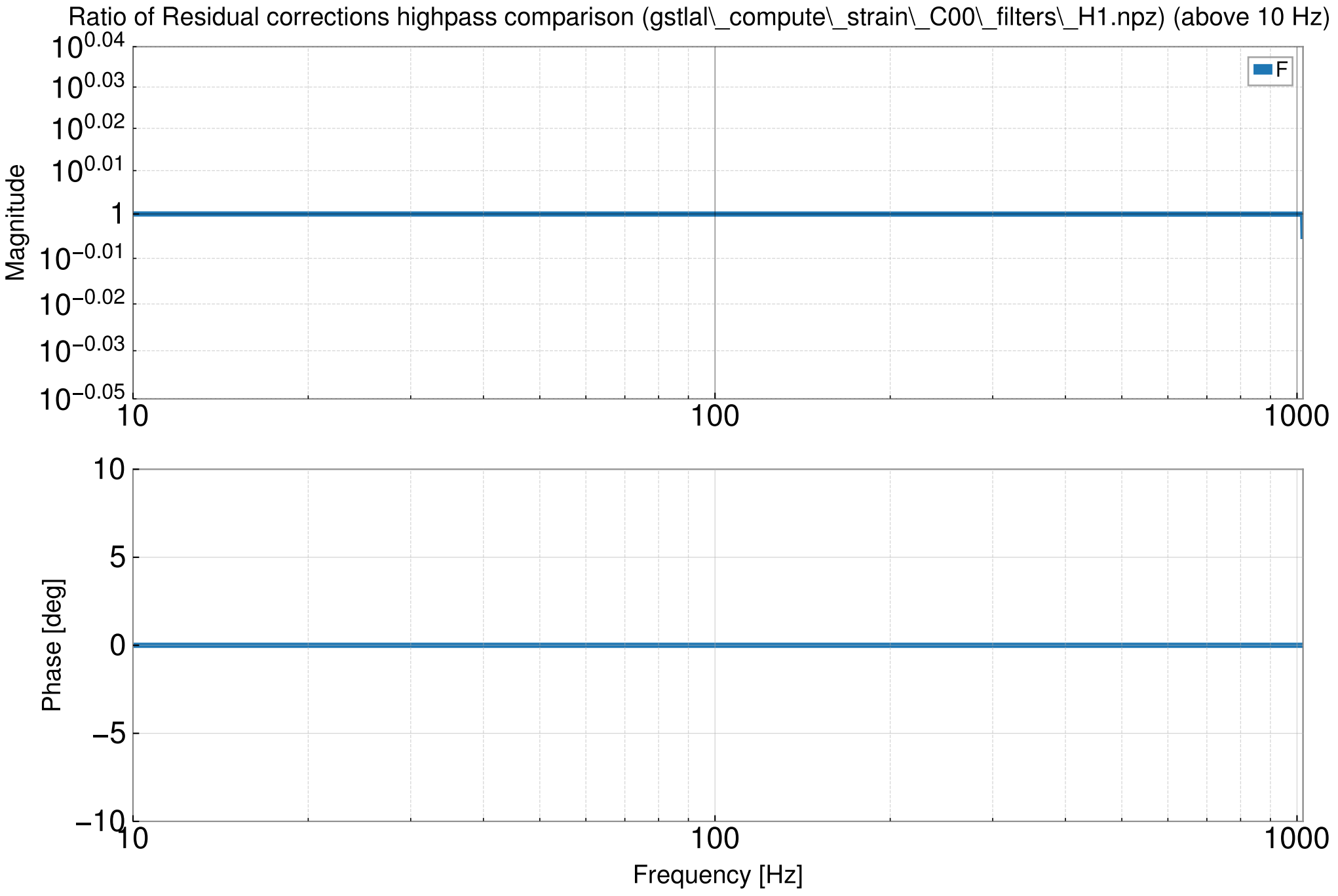

Nonsens corrections comparison (gstlal_compute_strain_C00_filters_H1.npz)
FIR filter
DARM model
Magnitude
$10^{1}$
$10^{-1}$
$10^{-3}$
$10^{-5}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

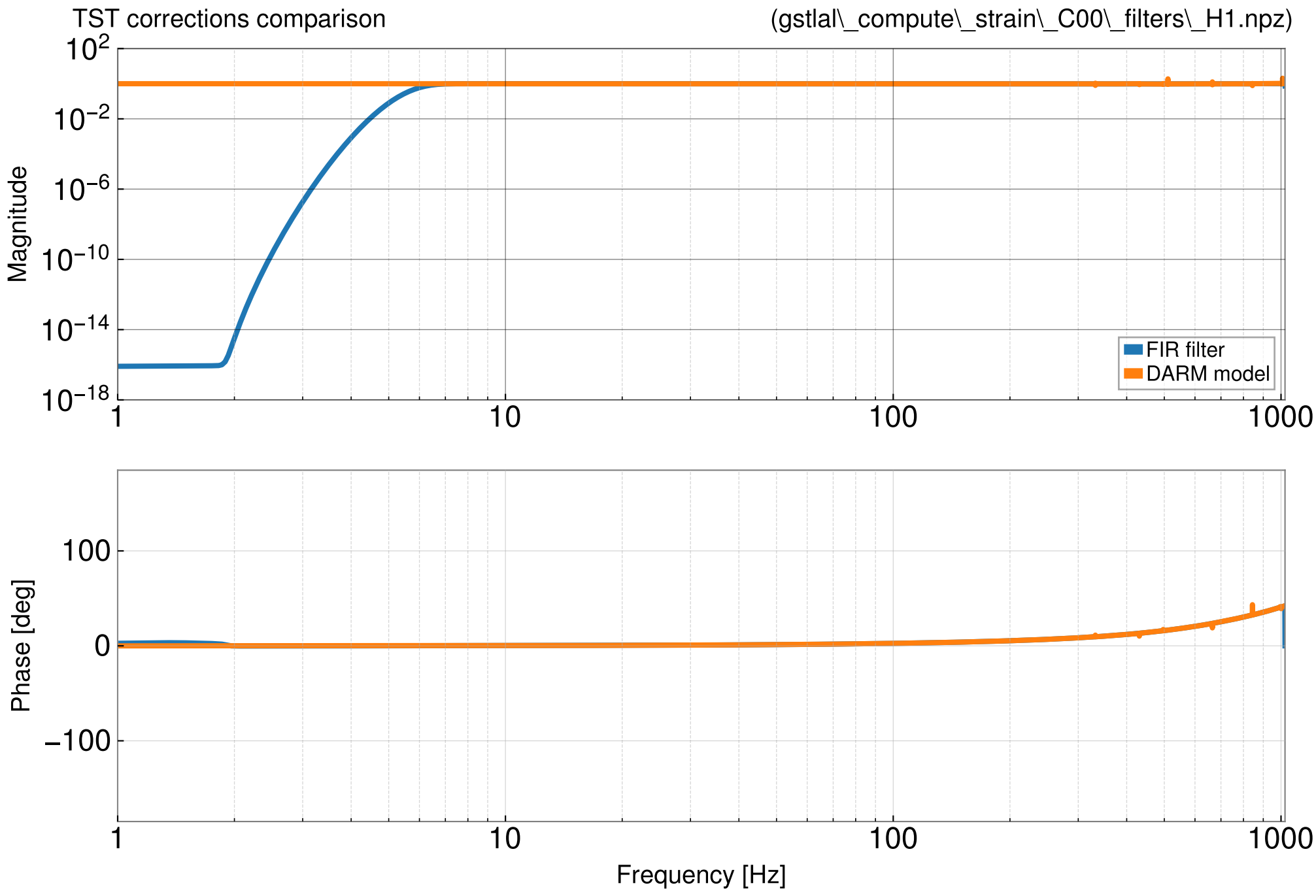

Ratio of Nonsens corrections comparison (gstlal_compute_strain_C00_filters_H1.npz)
F
Magnitude
$10^{-1}$
$10^{-3}$
$10^{-5}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

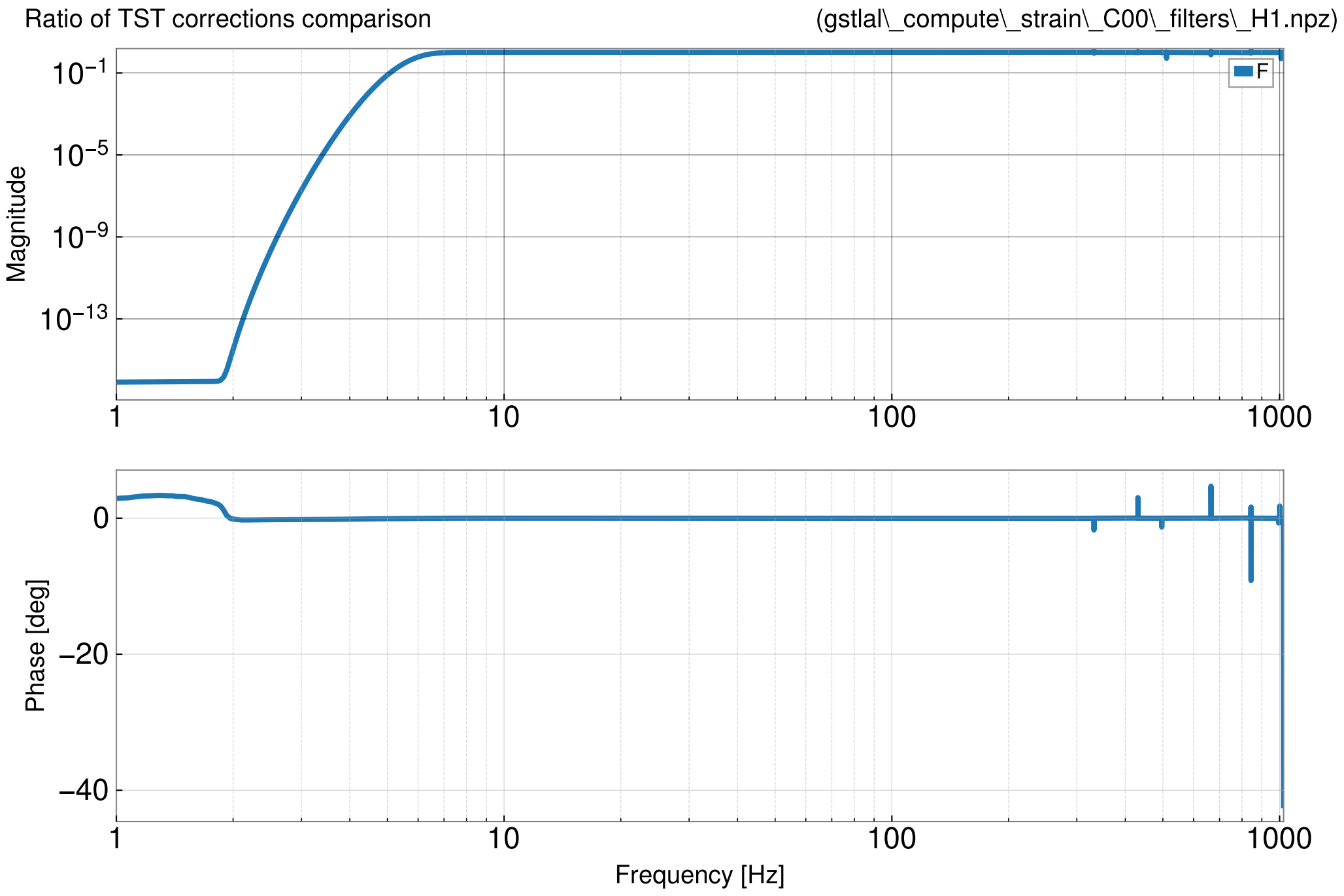

Ratio of Nonsens corrections comparison (gstlal_compute_strain_C00_filters_H1.npz) (above 10 Hz)
Magnitude
$10^{0.04}$
$10^{0.03}$
$10^{0.02}$
$10^{0.01}$
1
$10^{-0.01}$
$10^{-0.02}$
$10^{-0.03}$
$10^{-0.05}$
10
100
1000
F
Phase [deg]
10
5
0
−5
−10
10
100
1000
Frequency [Hz]

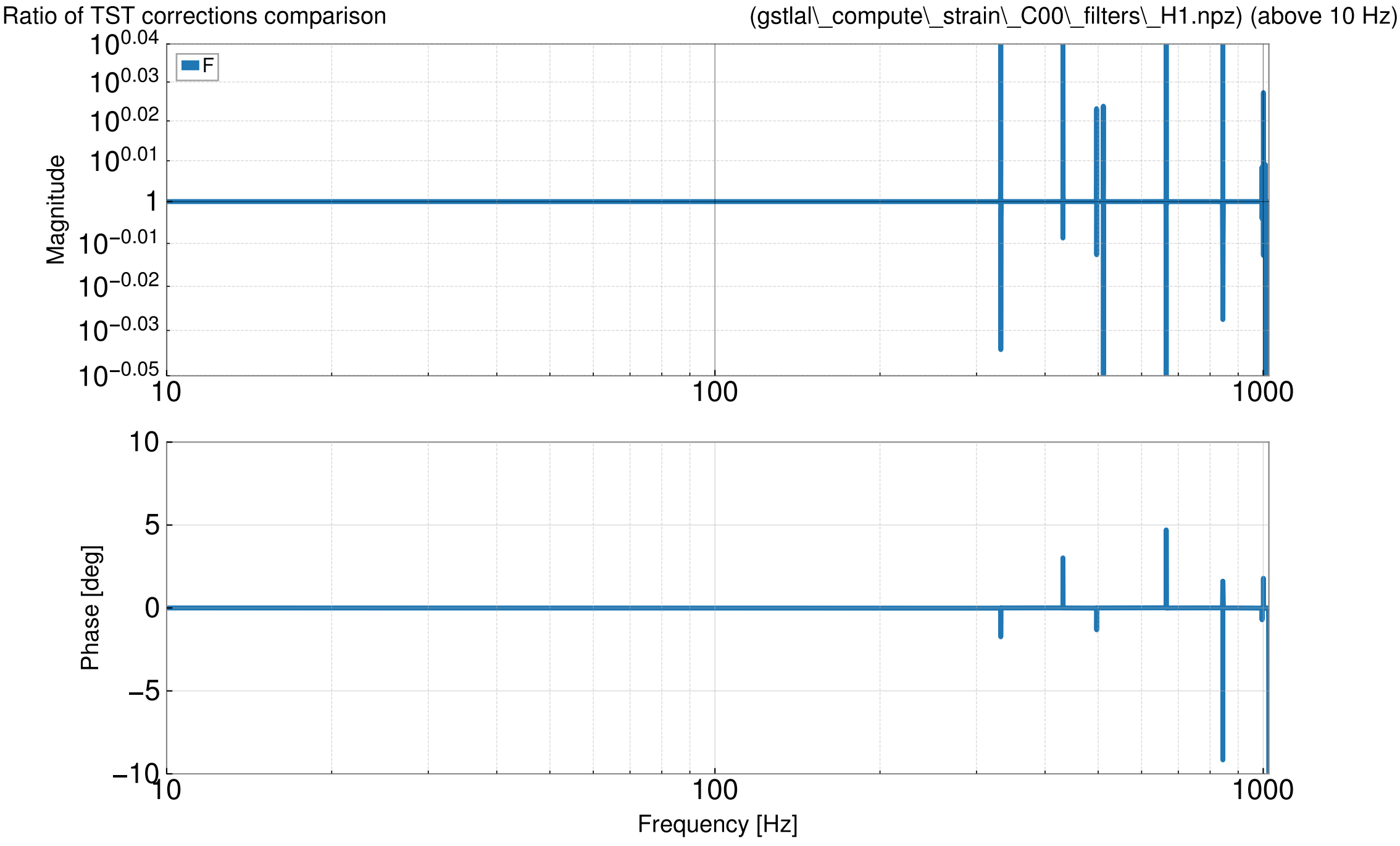

Residual corrections highpass comparison (gstlal_compute_strain_C00_filters_H1.npz)
Magnitude
$10^{1}$
$10^{-4}$
$10^{-9}$
$10^{-14}$
$10^{-19}$
1
10
100
1000
FIR filter
DARM model
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

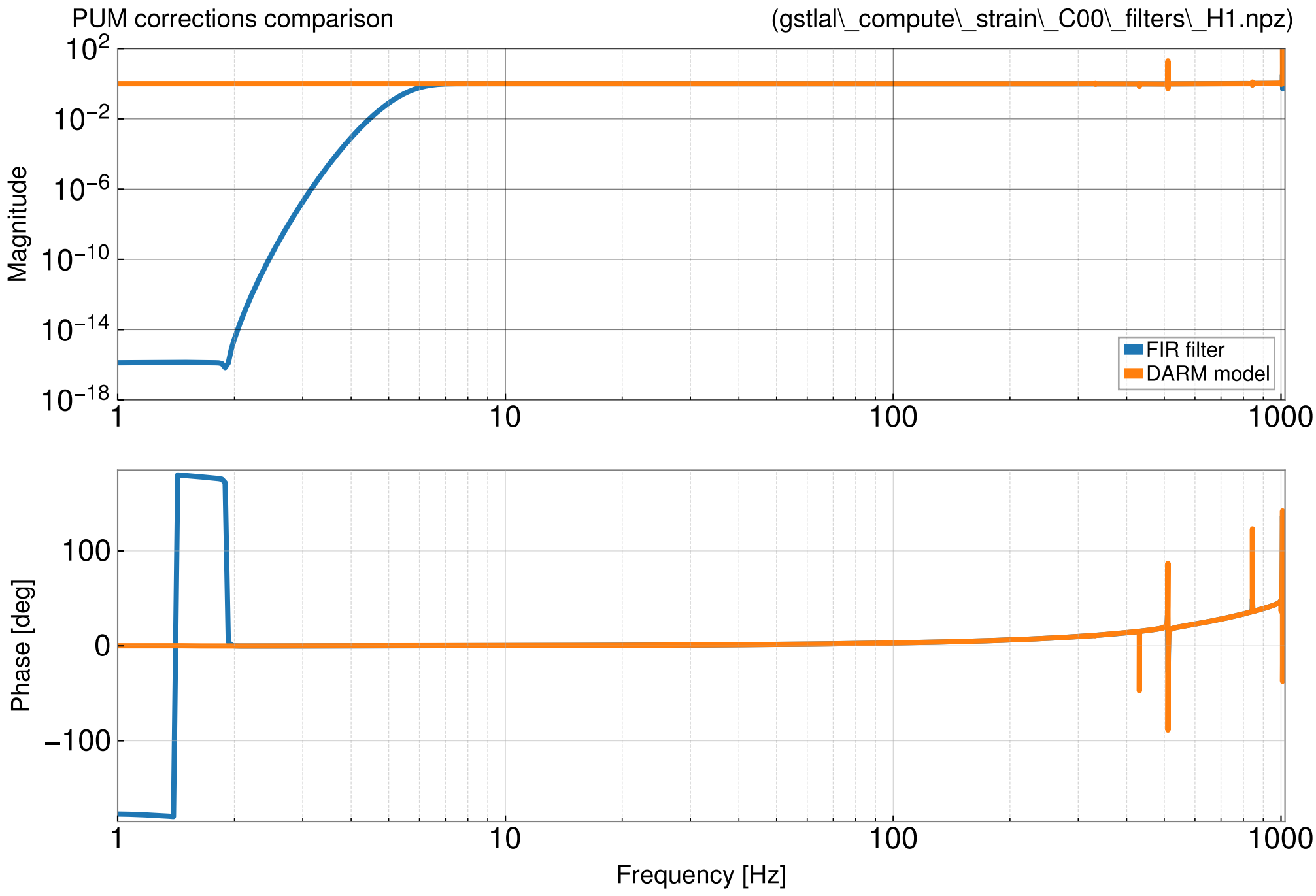

Ratio of Residual corrections highpass comparison (gstlal_compute_strain_C00_filters_H1.npz)
F
Magnitude
$10^{-3}$
$10^{-7}$
$10^{-11}$
$10^{-15}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

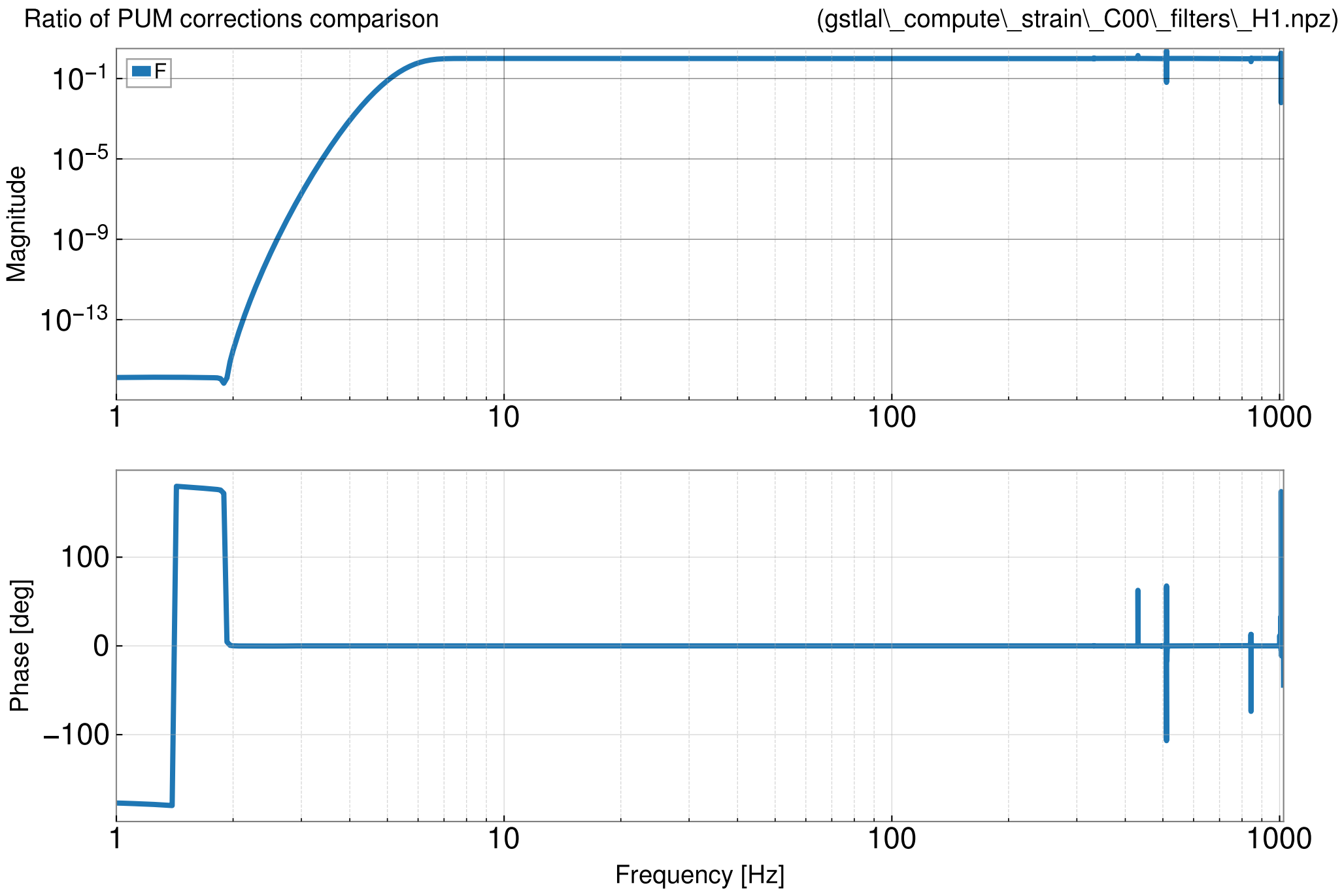

Ratio of Residual corrections highpass comparison (gstlal_compute_strain_C00_filters_H1.npz) (above 10 Hz)
Magnitude
$10^{0.04}$
$10^{0.03}$
$10^{0.02}$
$10^{0.01}$
1
$10^{-0.01}$
$10^{-0.02}$
$10^{-0.03}$
$10^{-0.05}$
F
10
100
1000
Phase [deg]
10
5
0
−5
−10
10
100
1000
Frequency [Hz]

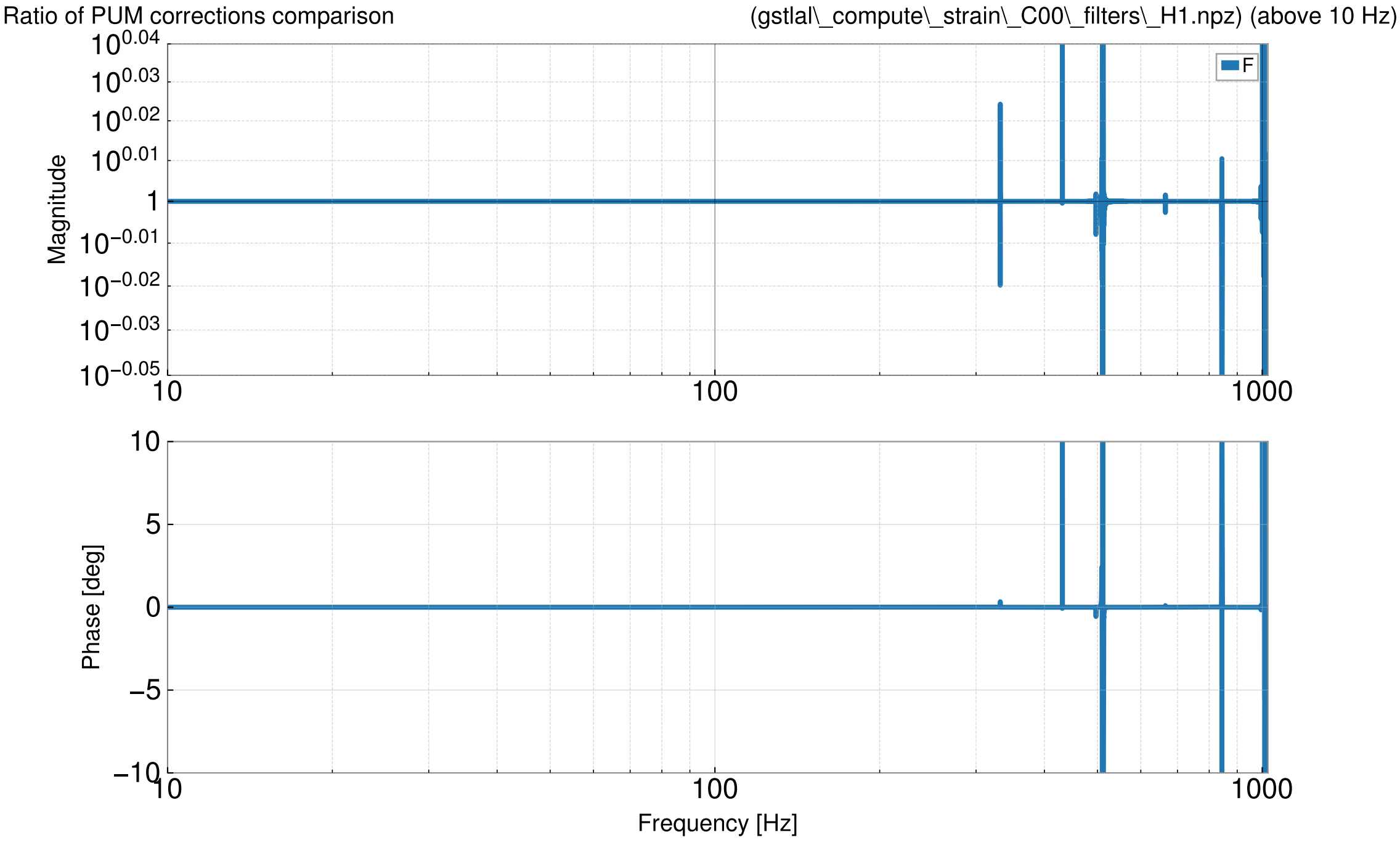

TST corrections comparison
(gstlal_compute_strain_C00_filters_H1.npz)
Magnitude
$10^{2}$
$10^{-2}$
$10^{-6}$
$10^{-10}$
$10^{-14}$
$10^{-18}$
1
10
100
1000
FIR filter
DARM model
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]

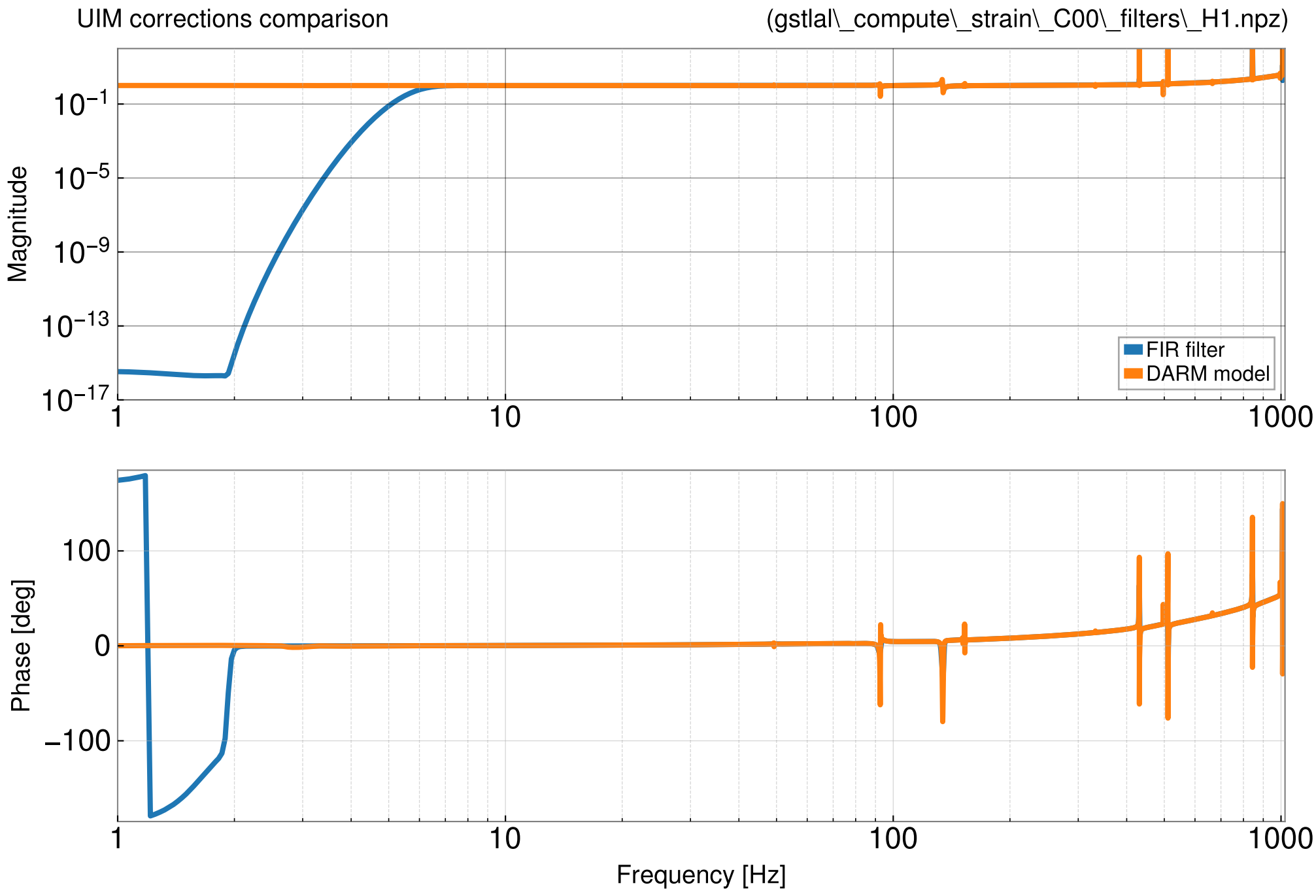

Ratio of TST corrections comparison
(gstlal_compute_strain_C00_filters_H1.npz)
F
Magnitude
$10^{-1}$
$10^{-5}$
$10^{-9}$
$10^{-13}$
1
10
100
1000
Phase [deg]
0
−20
−40
1
10
100
1000
Frequency [Hz]

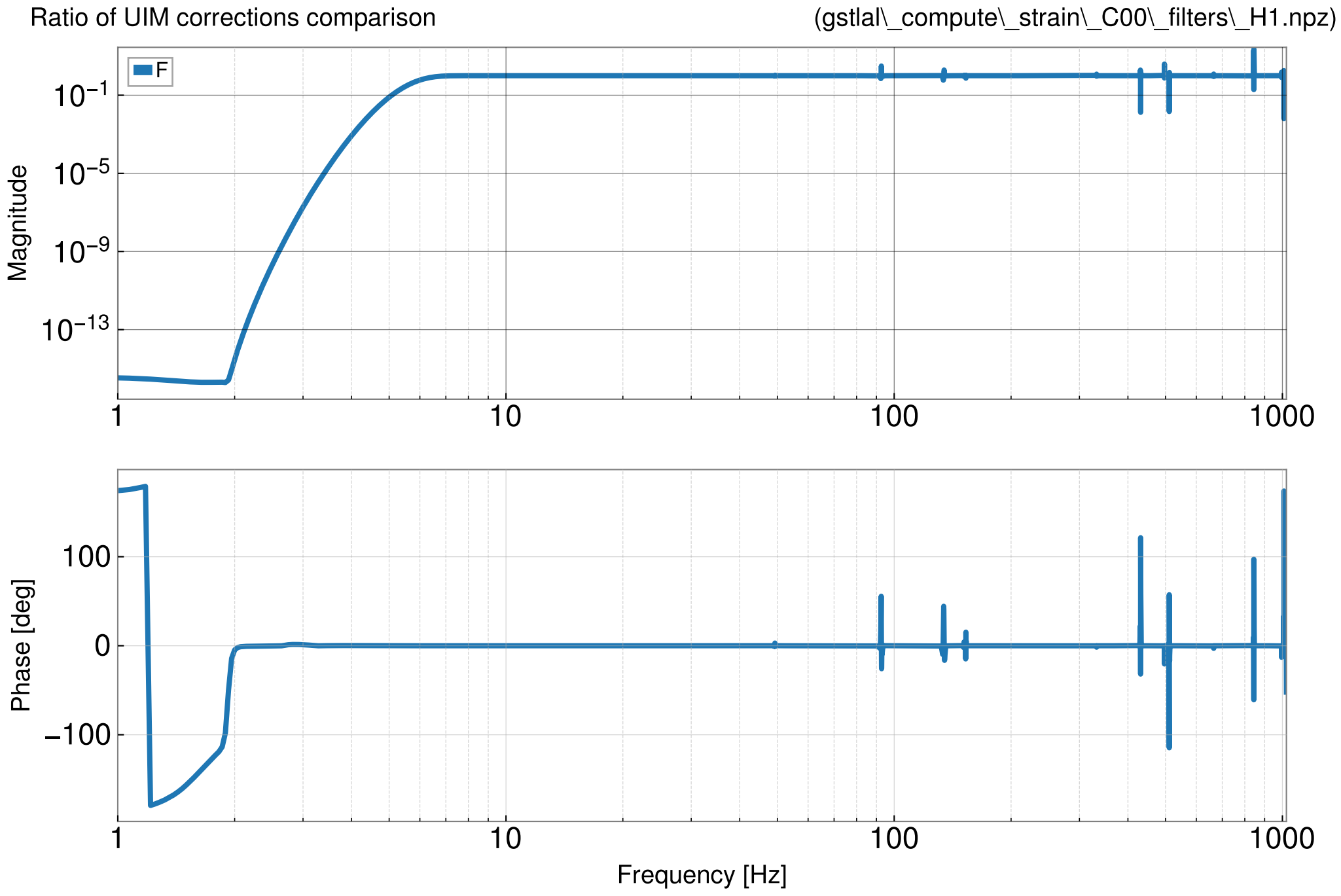

Ratio of TST corrections comparison
(gstlal_compute_strain_C00_filters_H1.npz) (above 10 Hz)
F
Magnitude
$10^{0.04}$
$10^{0.03}$
$10^{0.02}$
$10^{0.01}$
1
$10^{-0.01}$
$10^{-0.02}$
$10^{-0.03}$
$10^{-0.05}$
10
100
1000
Phase [deg]
10
5
0
−5
−10
10
100
1000
Frequency [Hz]

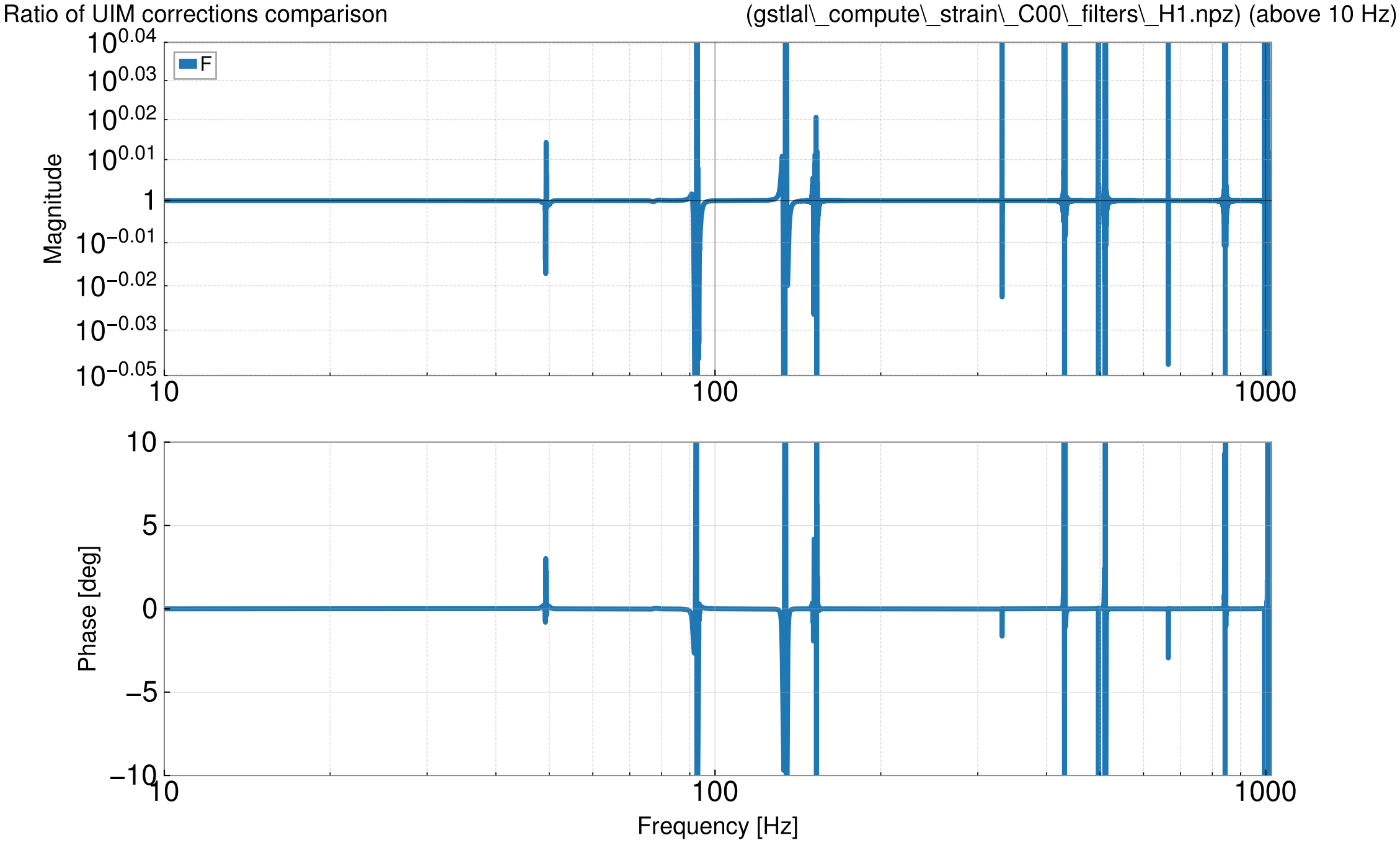

PUM corrections comparison
(gstlal_compute_strain_C00_filters_H1.npz)
Magnitude
$10^{2}$
$10^{-2}$
$10^{-6}$
$10^{-10}$
$10^{-14}$
$10^{-18}$
FIR filter
DARM model
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]


Ratio of PUM corrections comparison
(gstlal_compute_strain_C00_filters_H1.npz)
F
Magnitude
$10^{-1}$
$10^{-5}$
$10^{-9}$
$10^{-13}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]


Ratio of PUM corrections comparison
(gstlal_compute_strain_C00_filters_H1.npz) (above 10 Hz)
F
Magnitude
$10^{0.04}$
$10^{0.03}$
$10^{0.02}$
$10^{0.01}$
1
$10^{-0.01}$
$10^{-0.02}$
$10^{-0.03}$
$10^{-0.05}$
10
100
1000
Phase [deg]
10
5
0
−5
−10
10
100
1000
Frequency [Hz]


UIM corrections comparison
(gstlal_compute_strain_C00_filters_H1.npz)
Magnitude
$10^{-1}$
$10^{-5}$
$10^{-9}$
$10^{-13}$
$10^{-17}$
FIR filter
DARM model
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]


Ratio of UIM corrections comparison
(gstlal_compute_strain_C00_filters_H1.npz)
F
Magnitude
$10^{-1}$
$10^{-5}$
$10^{-9}$
$10^{-13}$
1
10
100
1000
Phase [deg]
100
0
−100
1
10
100
1000
Frequency [Hz]


Ratio of UIM corrections comparison
(gstlal_compute_strain_C00_filters_H1.npz) (above 10 Hz)
F
Magnitude
$10^{0.04}$
$10^{0.03}$
$10^{0.02}$
$10^{0.01}$
1
$10^{-0.01}$
$10^{-0.02}$
$10^{-0.03}$
$10^{-0.05}$
10
100
1000
Phase [deg]
10
5
0
−5
−10
10
100
1000
Frequency [Hz]