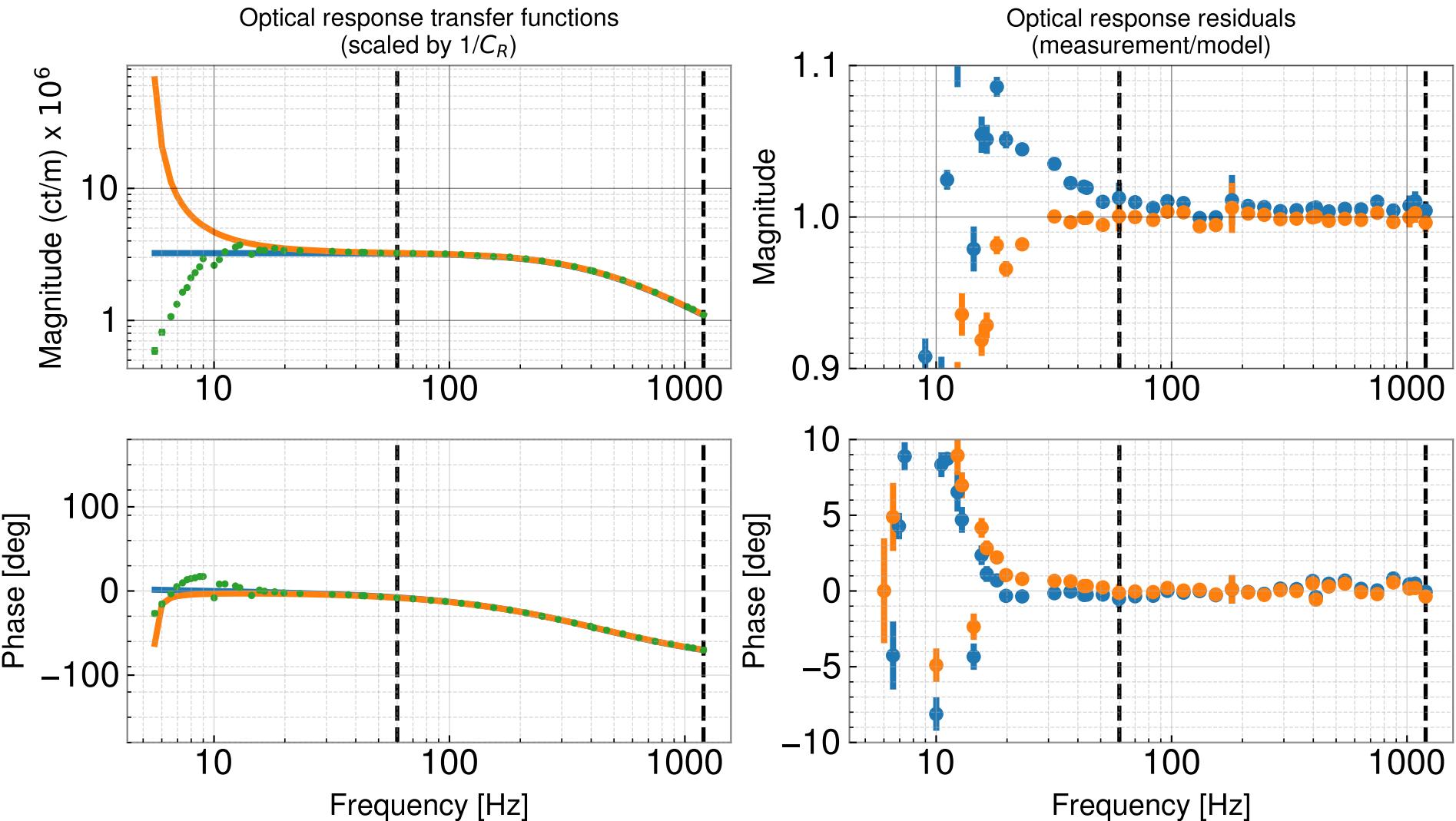
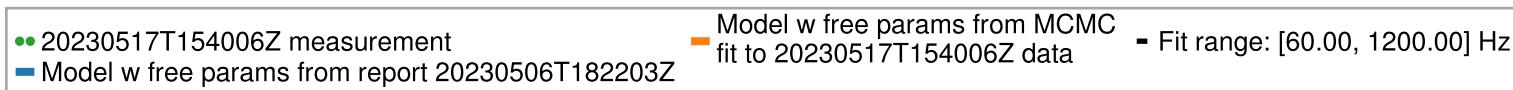


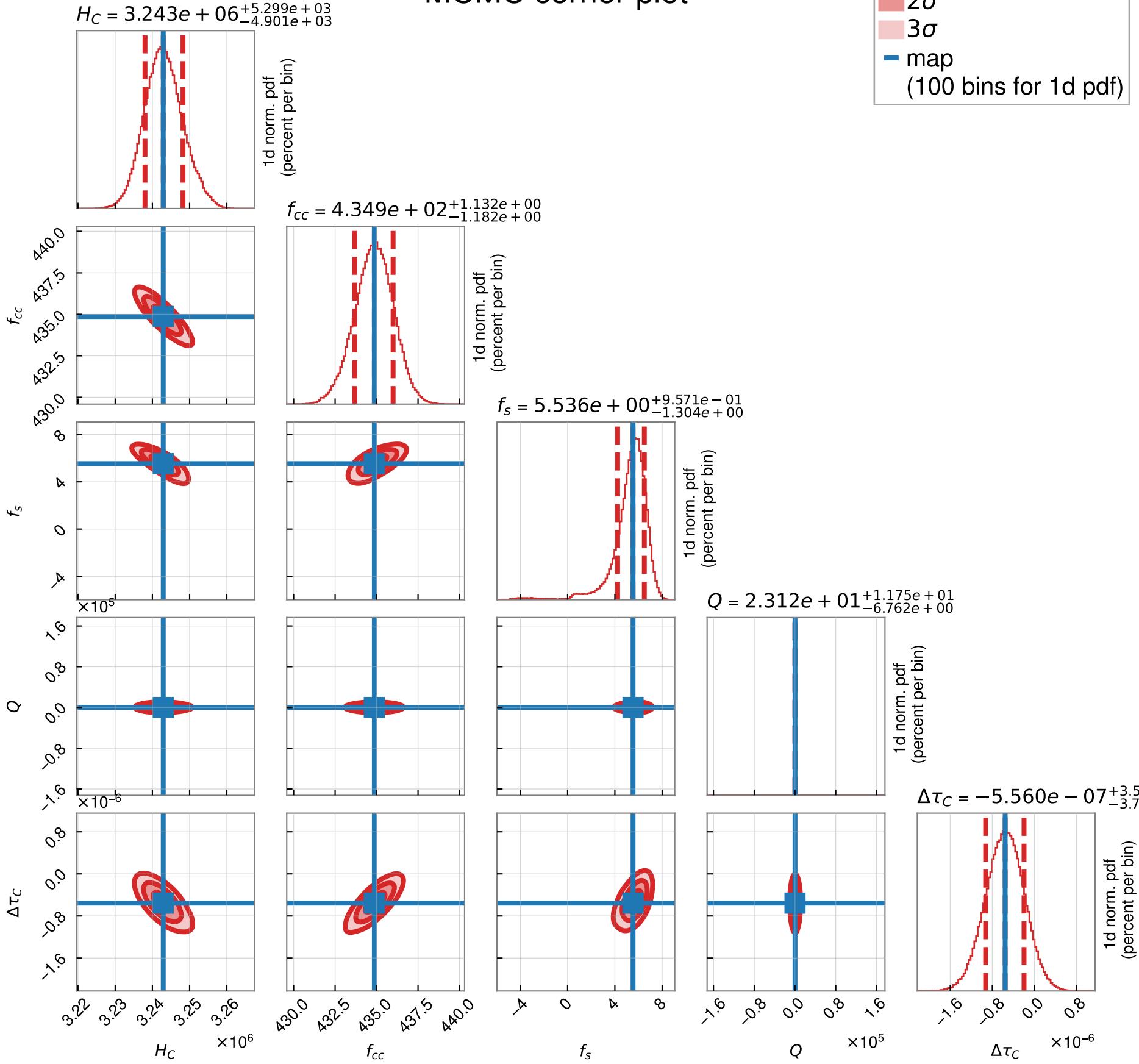
H1 sensing model MCMC summary

All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230517T163625Z/pydarm_H1.ini



| Parameter | (value +/-) | value | + | - |
|--|-------------|------------------------|---------------------|---------------------|
| Optical gain, H_c (ct/m) | | 3.243×10^6 | 5299 (0.16%) | 4901 (0.15%) |
| Cavity_pole, f_{cc} (Hz) | | 434.9 | 1.132 (0.26%) | 1.182 (0.27%) |
| Detuned SRC spring frequency, f_s (Hz) | | 5.536 | 0.9571 (17.29%) | 1.304 (23.56%) |
| Detuned SRC spring quality factor, Q_s | | 23.12 | 11.75 (50.83%) | 6.762 (29.25%) |
| Residual time delay, τ_c (s) | | -5.56×10^{-7} | 3.588e-07 (-64.53%) | 3.703e-07 (-66.61%) |

20230517T154006Z sensing function MCMC corner plot



H1 sensing model history

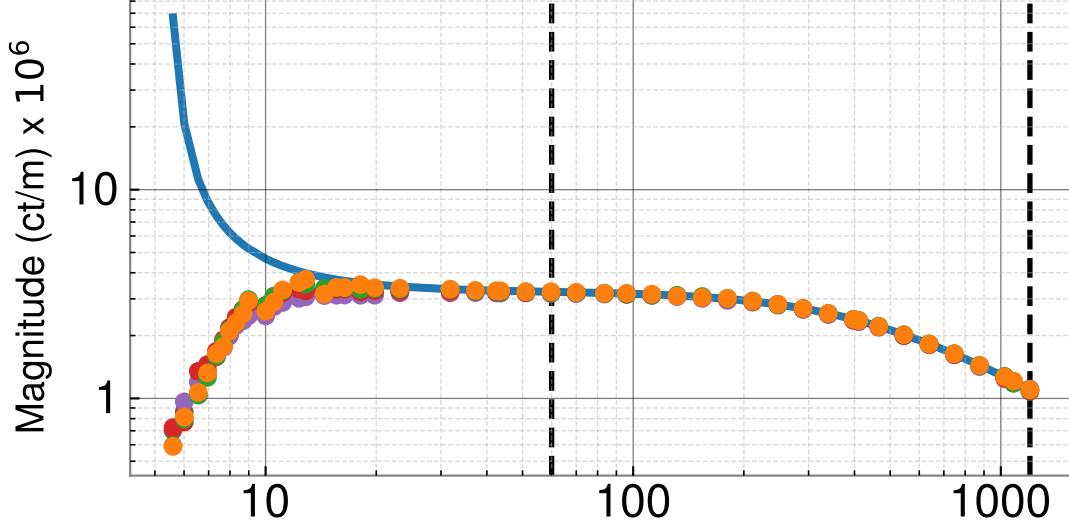
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230517T163625Z/pydarm_H1.ini

— 20230506T182203Z model
● 20230517T154006Z measurement
● 20230510T062635Z measurement

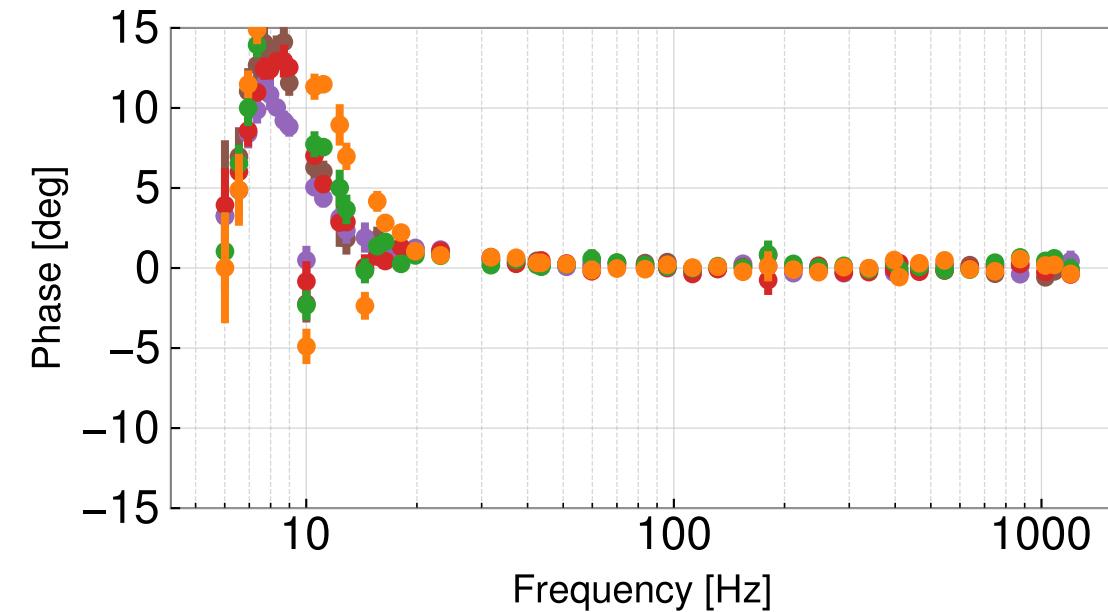
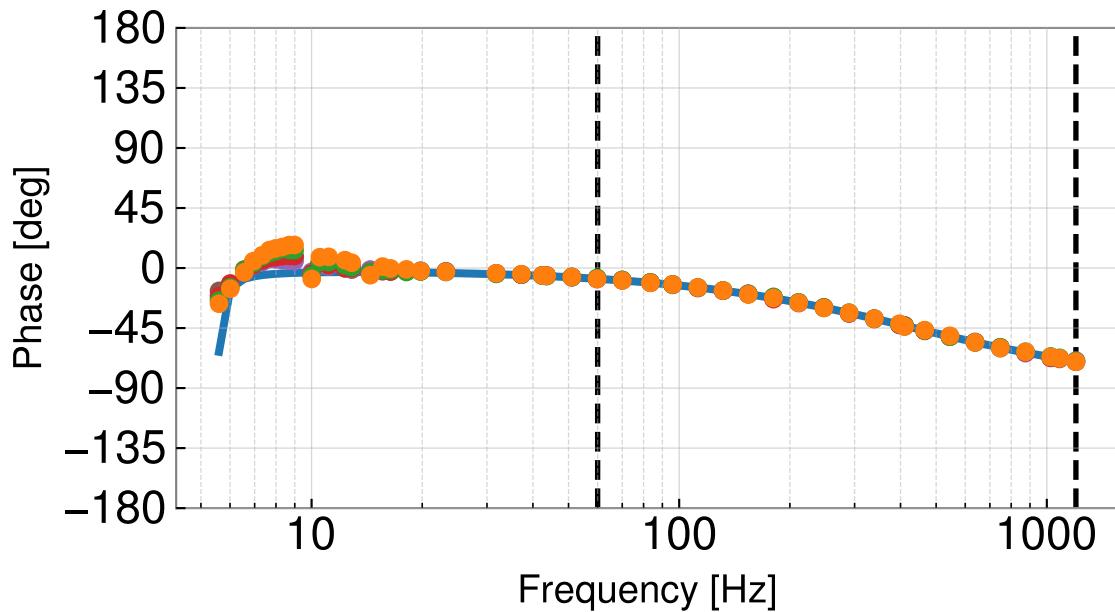
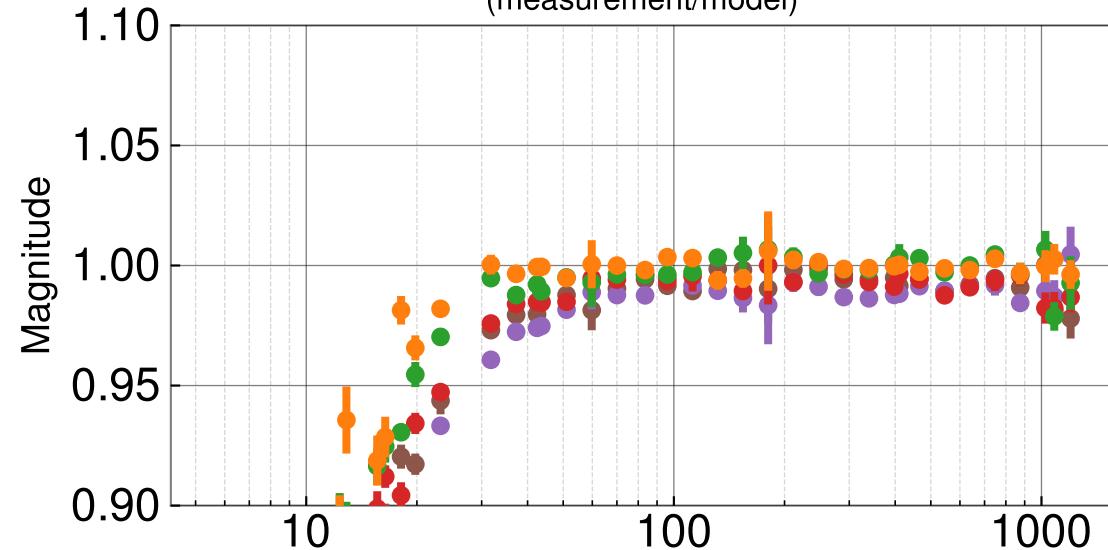
● 20230509T070754Z measurement
● 20230508T180014Z measurement

● 20230506T182203Z measurement
- Fit range: [60.00, 1200.00] Hz

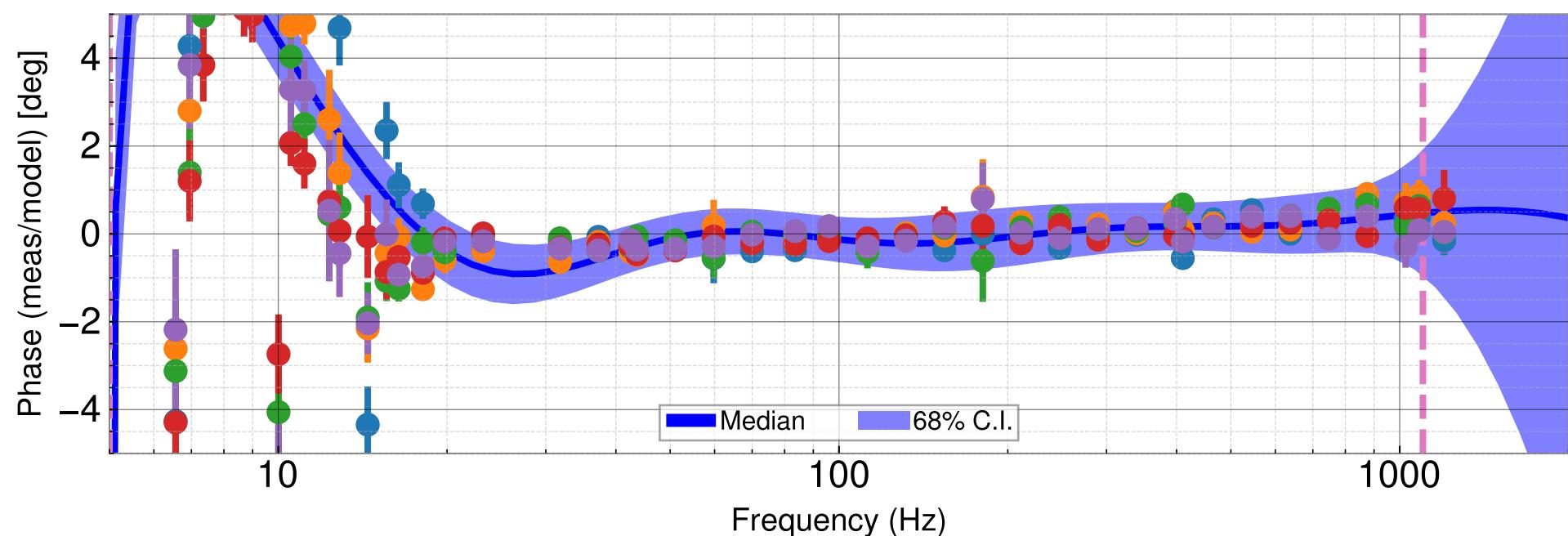
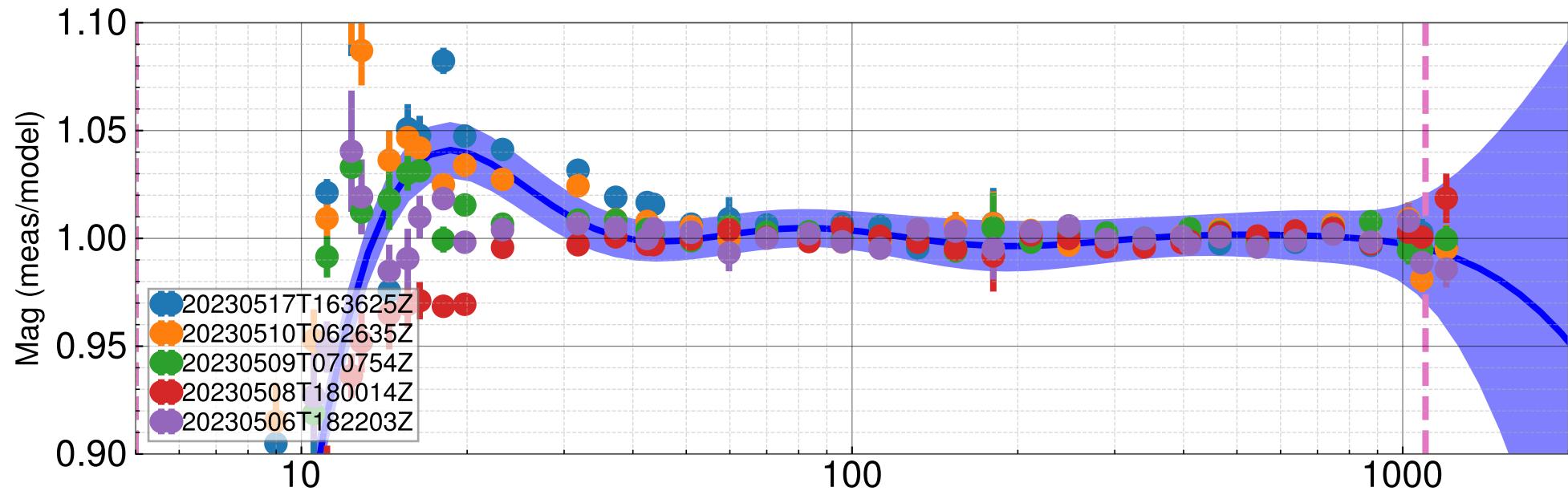
Optical response transfer functions
(scaled by $1/C_R$)



Optical response residuals
(measurement/model)



Sensing GPR



H1SUSEX L1 actuation model MCMC summary

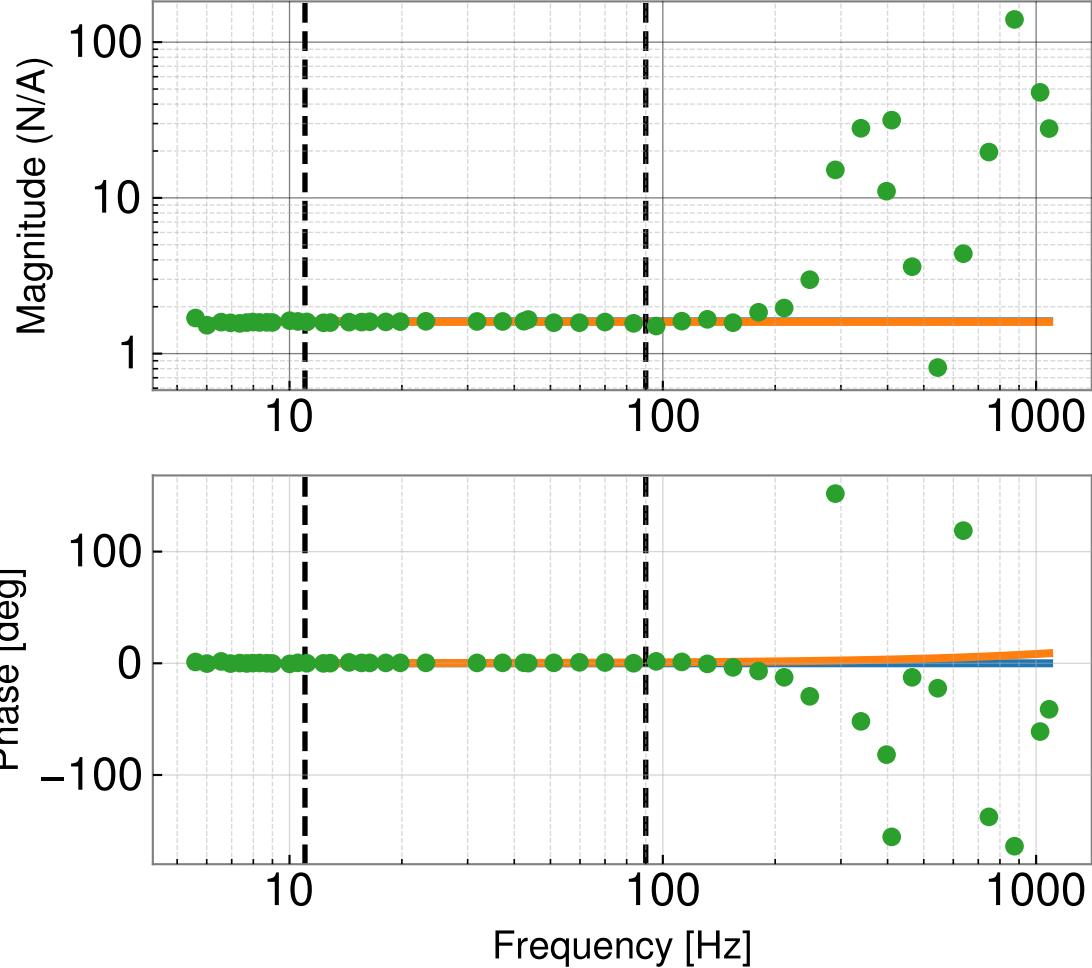
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230517T163625Z/pydarm_H1.ini

- Model w free params from report 20230517T163625Z
- Model w free params from
- MCMC fit to 20230517T154837Z data

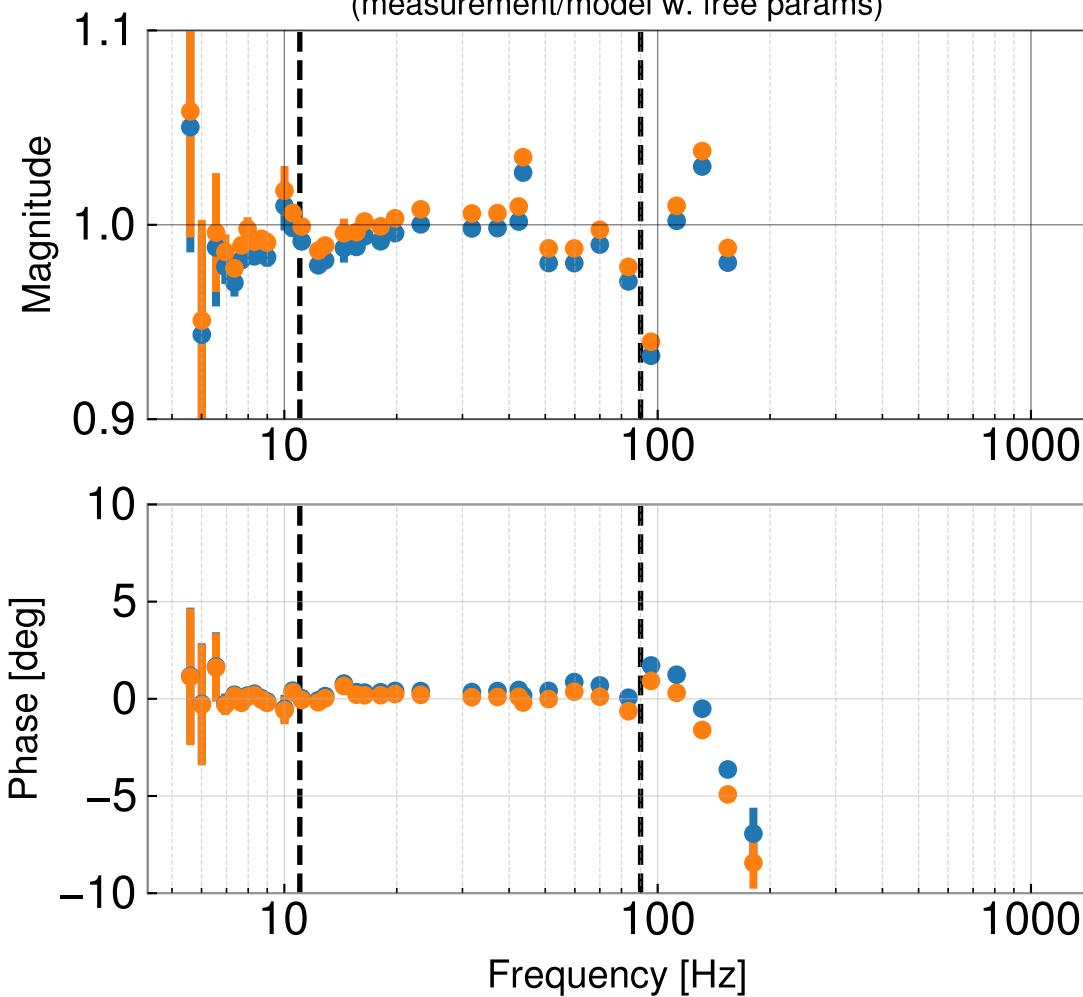
20230517T154837Z measurement

Fit range 11.0 to 90.0 Hz

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



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



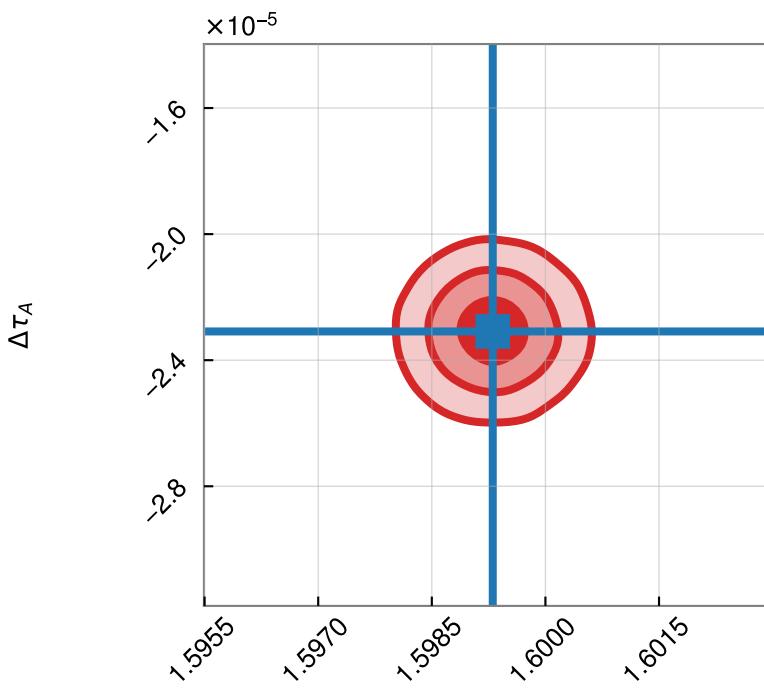
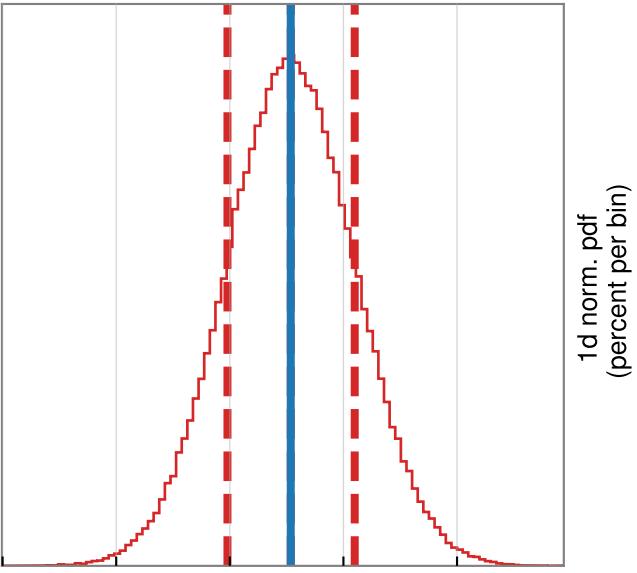
| Parameter | (value +/-) | value |
|--------------------------------|-------------|-------|
| Actuation Gain, Hau (N/A) | 1.599 | |
| Residual time delay, tau_A (s) | -2.309e-05 | |

| + | - |
|--------------------|--------------------|
| 0.0008445 (0.05%) | 0.0008356 (0.05%) |
| 1.894e-06 (-8.21%) | 1.891e-06 (-8.19%) |

20230517T154837Z EX L1 actuation MCMC corner plot

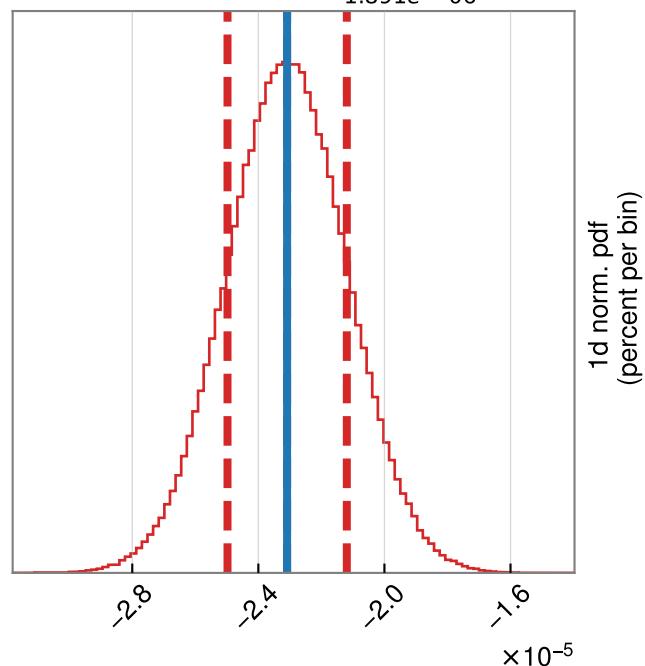
2d pdf contours
 — 1 σ
 — 2 σ
 — 3 σ
 — map
 (100 bins for 1d pdf)

$$H_{UIM} = 1.599e + 00^{+8.445e - 04}_{-8.356e - 04}$$



H_{UIM}

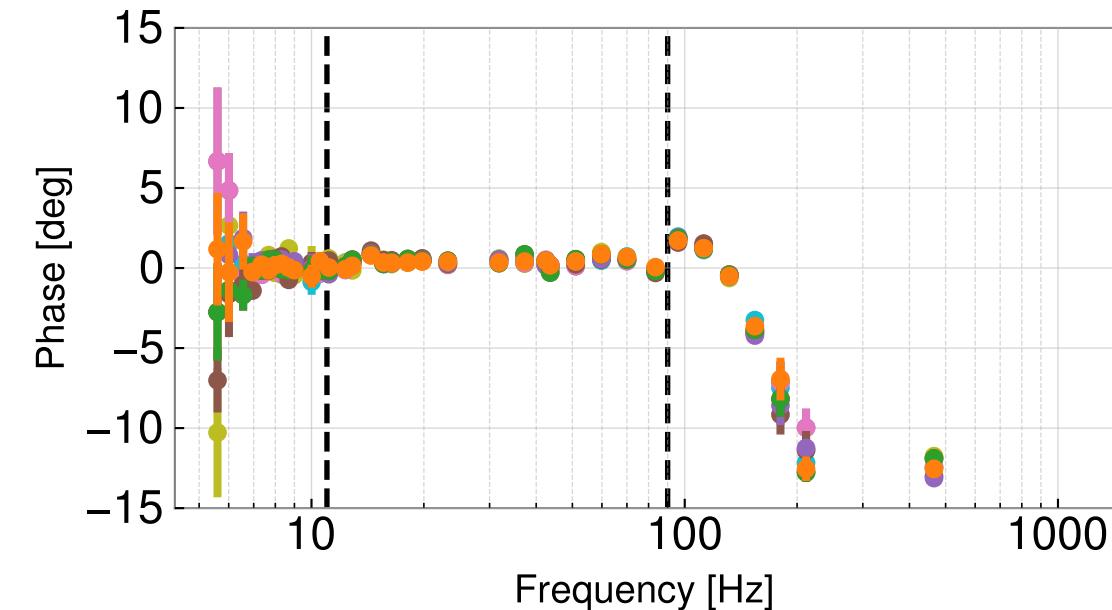
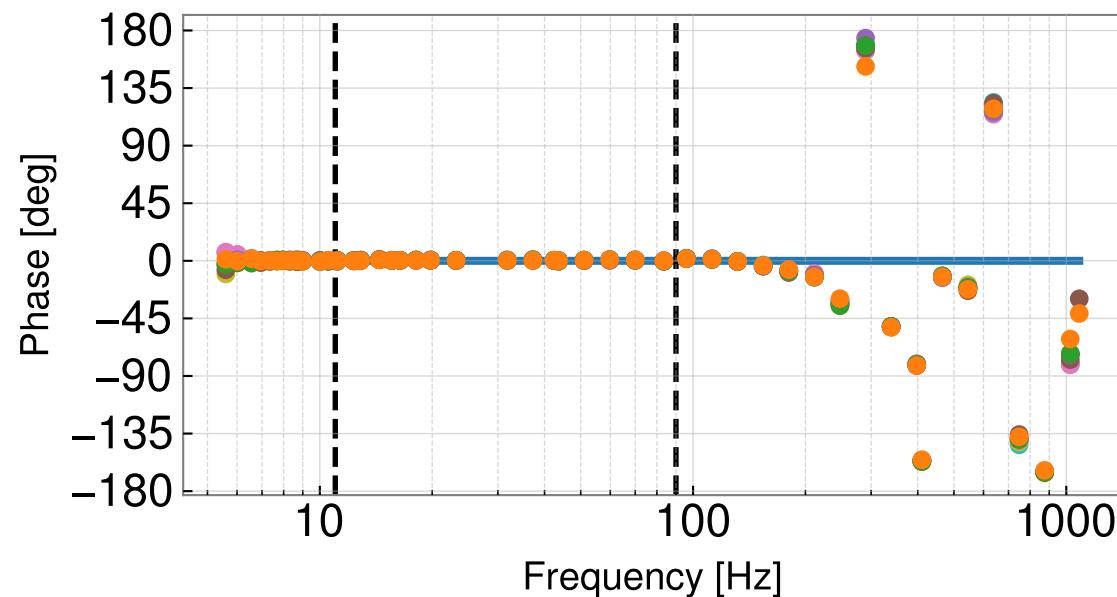
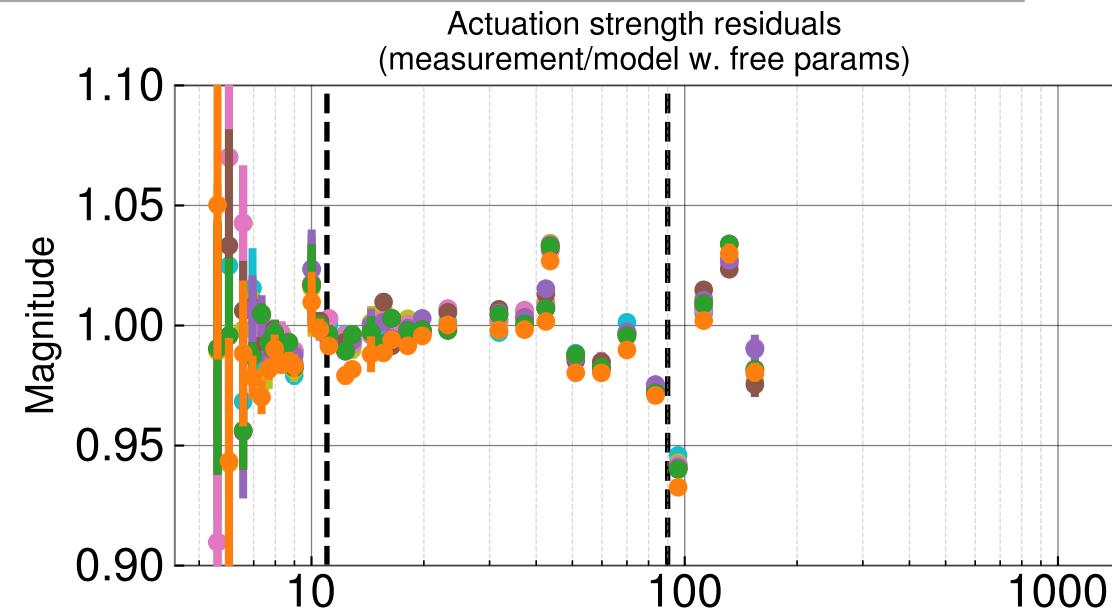
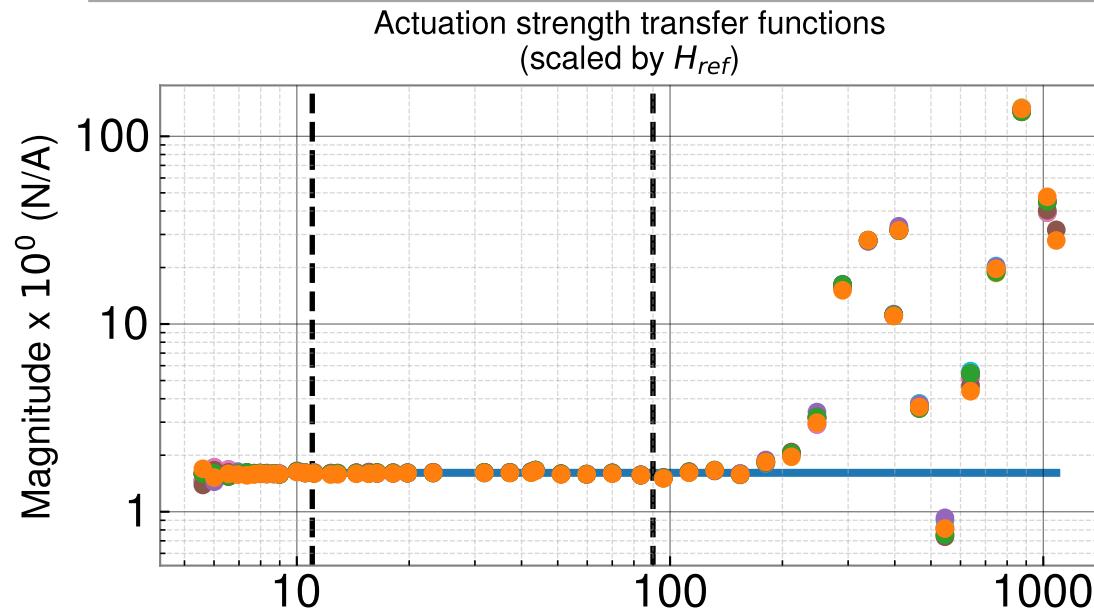
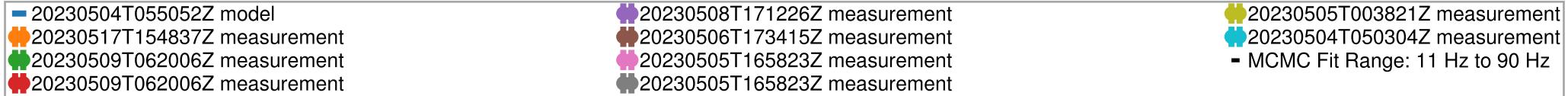
$$\Delta\tau_A = -2.309e - 05^{+1.894e - 06}_{-1.891e - 06}$$



$\Delta\tau_A$

H1SUSEX L1 actuation model history

All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230517T163625Z/pydarm_H1.ini



H1SUSEX L2 actuation model MCMC summary

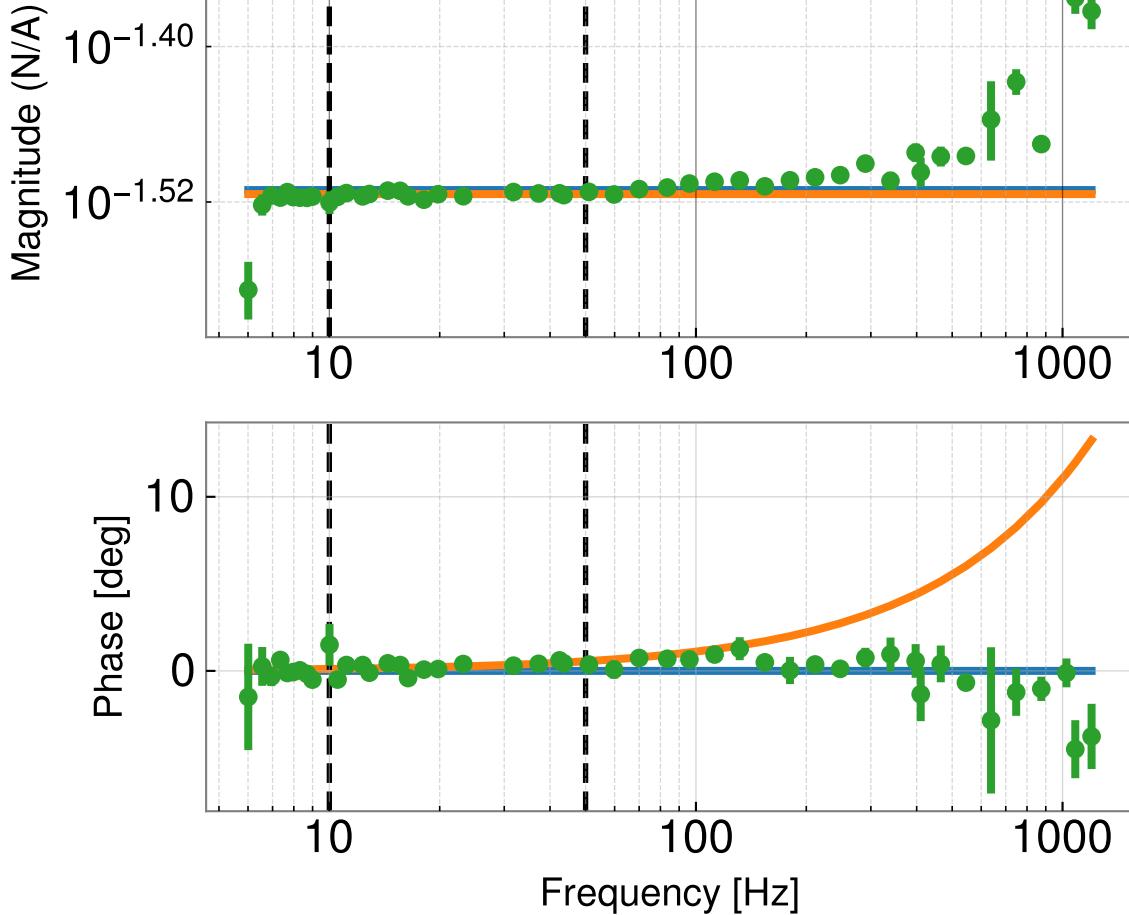
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230517T163625Z/pydarm_H1.ini

- Model w free params from report 20230517T163625Z
- Model w free params from
- MCMC fit to 20230517T161131Z data

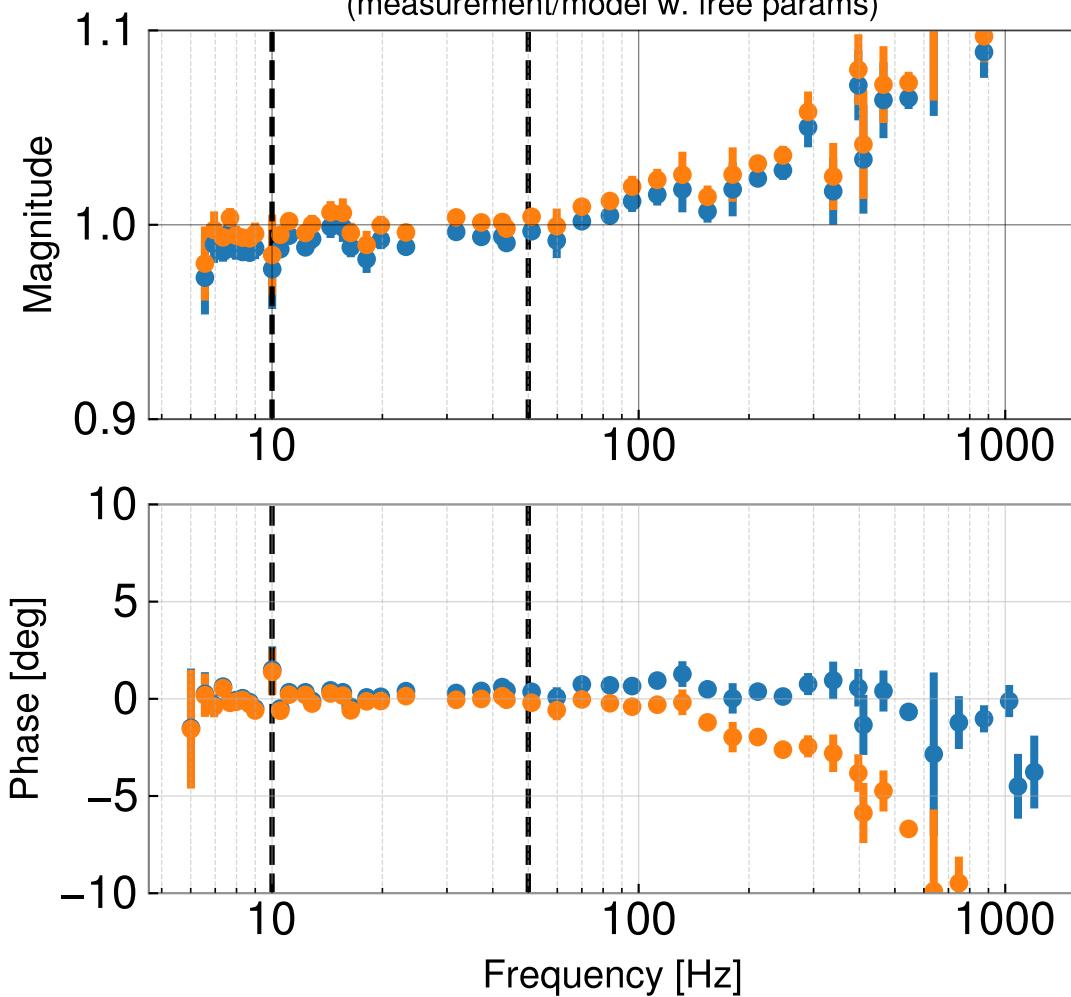
20230517T161131Z measurement

Fit range 10.0 to 50.0 Hz

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



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



Parameter

(value +/-) | value

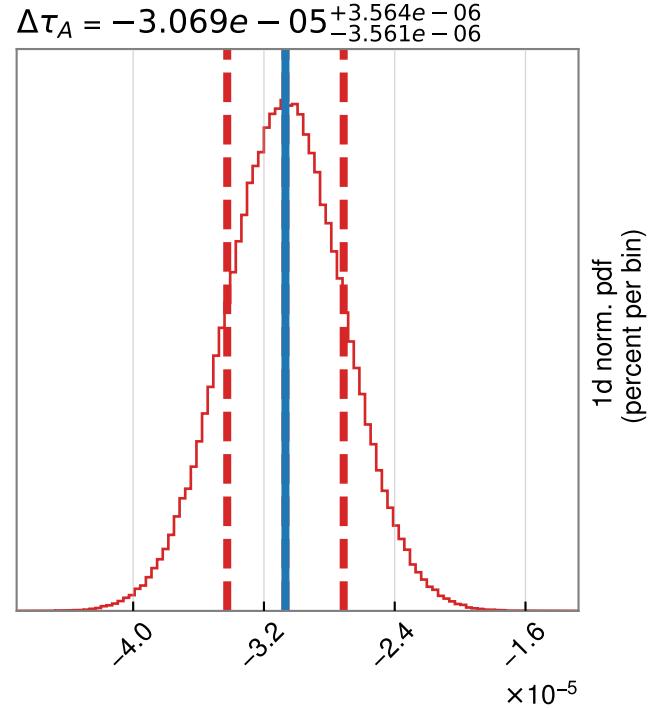
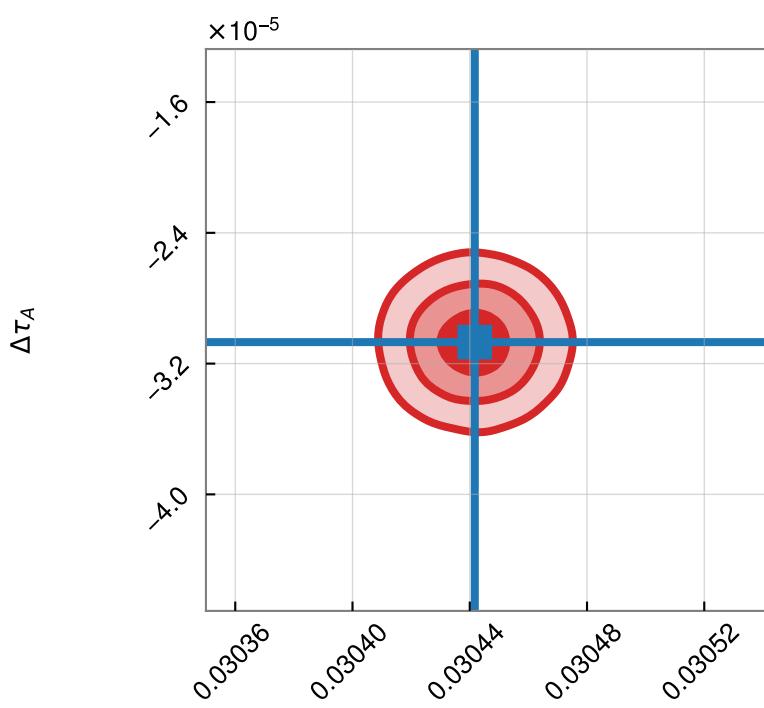
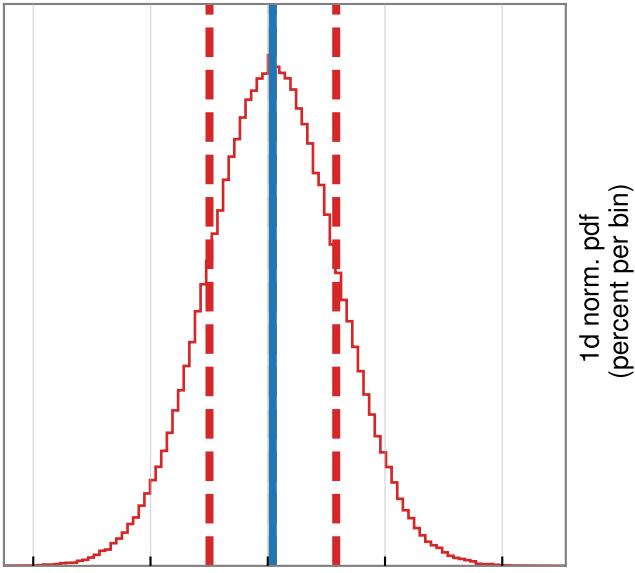
| Actuation Gain, Hap (N/A) | 0.03044 |
|--------------------------------|------------|
| Residual time delay, tau_A (s) | -3.069e-05 |

| + | - |
|---------------------|---------------------|
| 2.164e-05 (0.07%) | 2.159e-05 (0.07%) |
| 3.564e-06 (-11.61%) | 3.561e-06 (-11.60%) |

20230517T161131Z EX L2 actuation MCMC corner plot

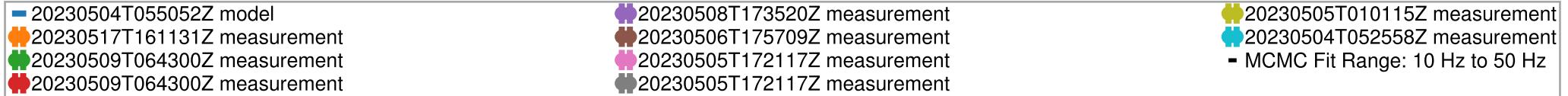
2d pdf contours
 — 1 σ
 — 2 σ
 — 3 σ
 — map
 (100 bins for 1d pdf)

$$H_{PUM} = 3.044e - 02^{+2.164e - 05}_{-2.159e - 05}$$

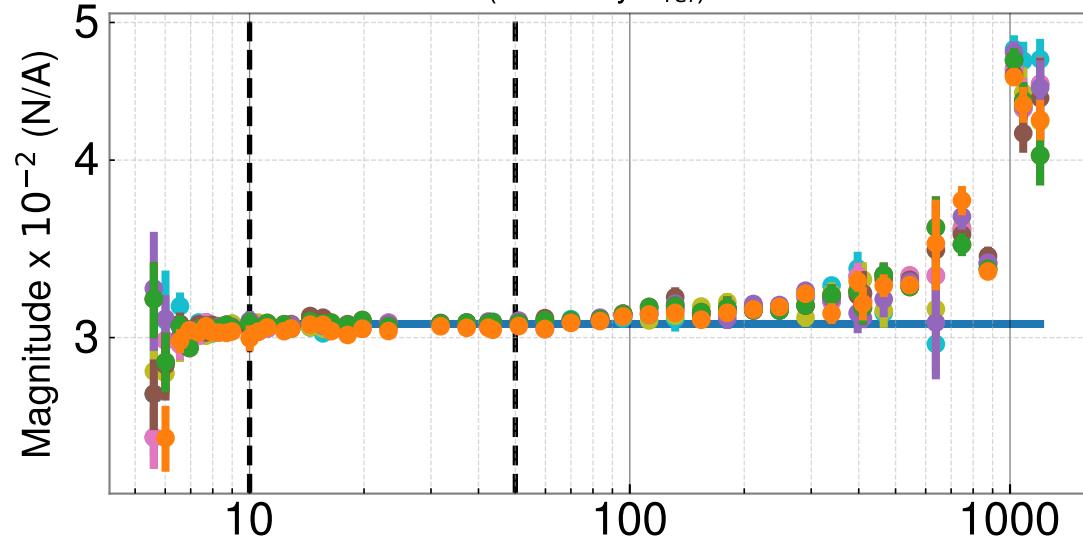


H1SUSEX L2 actuation model history

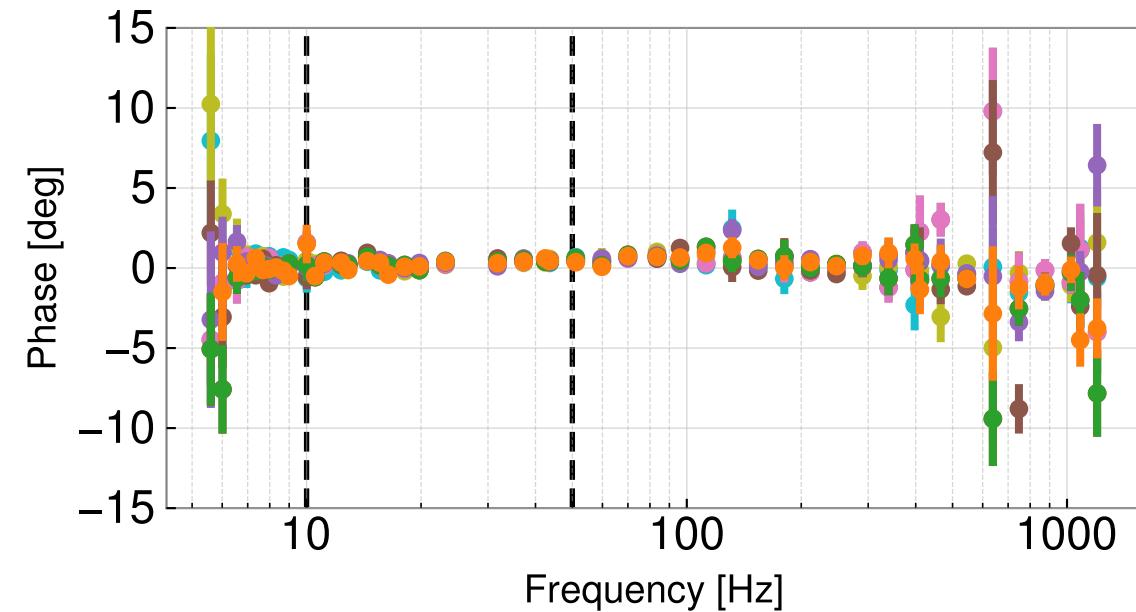
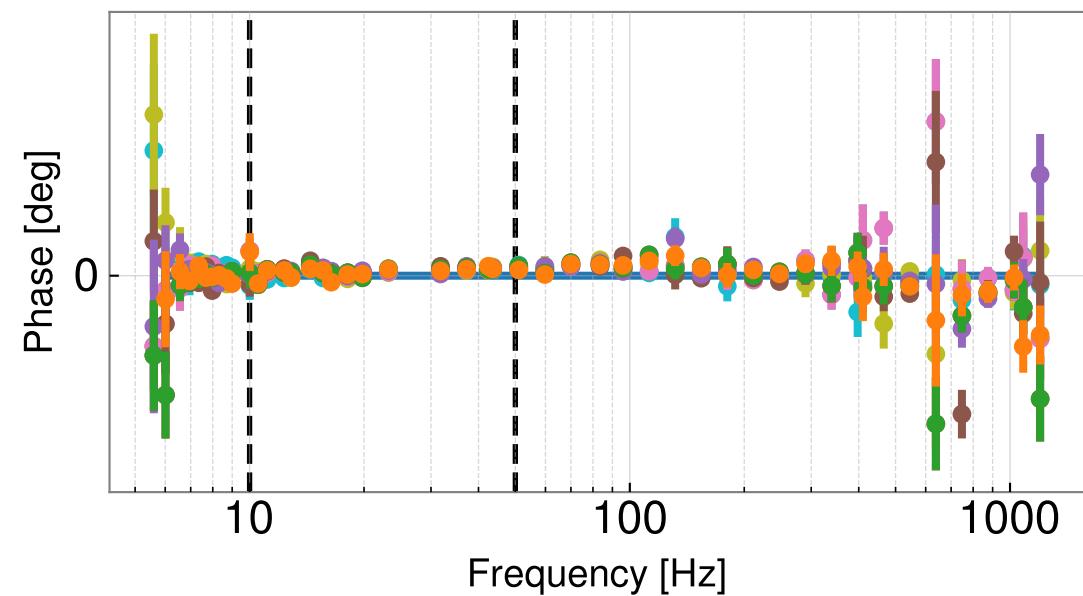
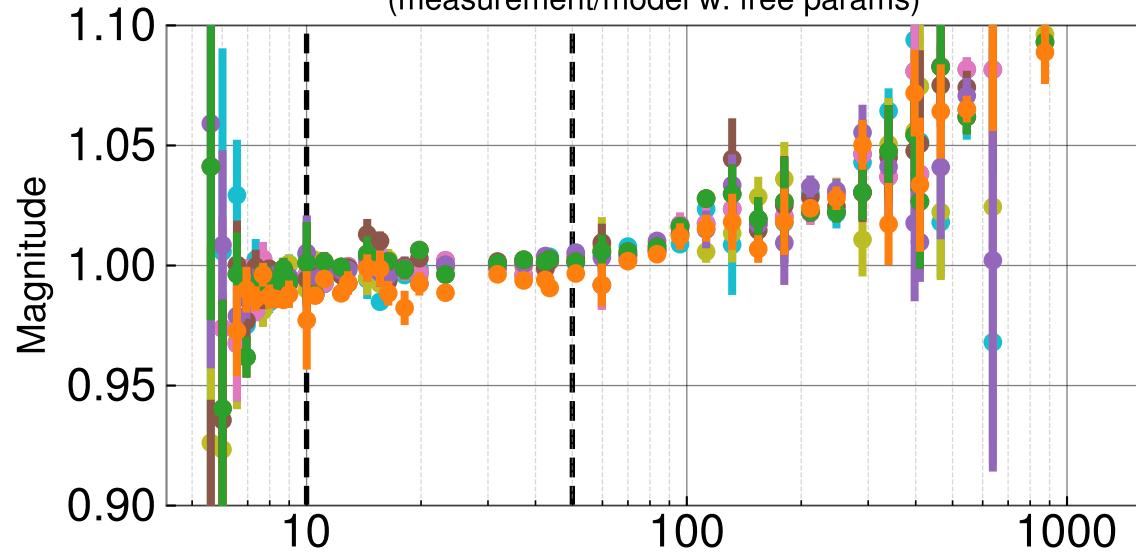
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230517T163625Z/pydarm_H1.ini



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



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



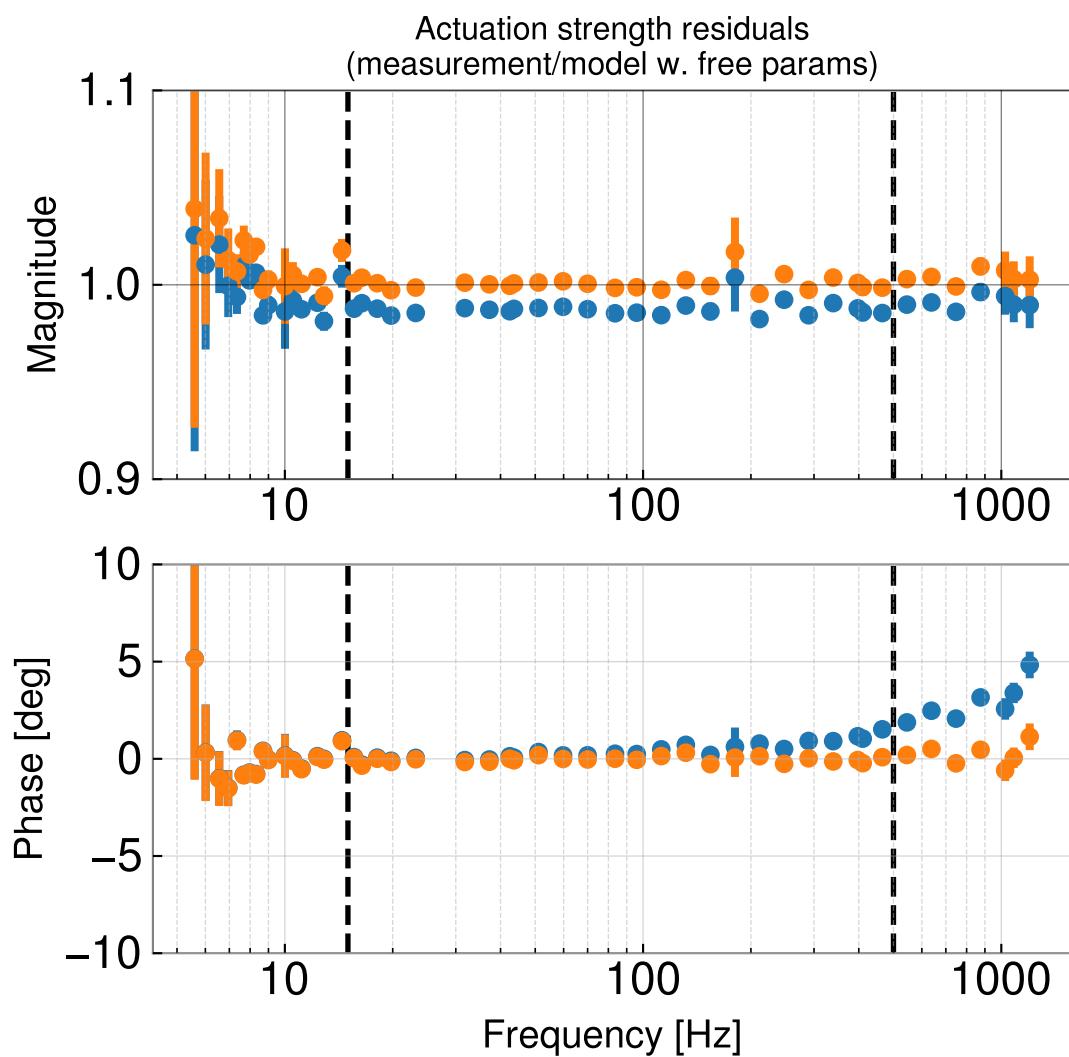
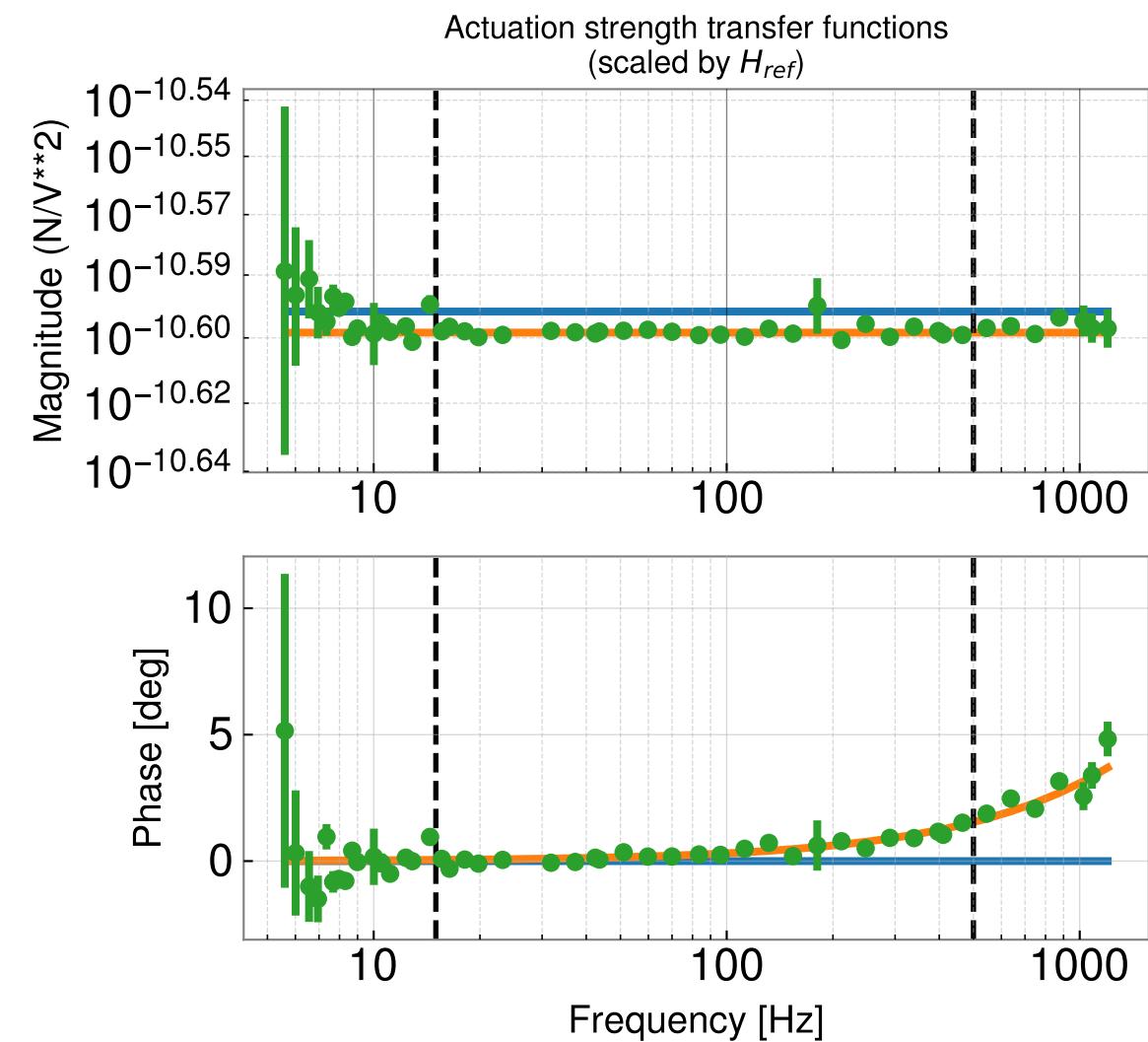
H1SUSEX L3 actuation model MCMC summary

All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230517T163625Z/pydarm_H1.ini

- Model w free params from report 20230517T163625Z
- Model w free params from
- MCMC fit to 20230517T163635Z data

20230517T163635Z measurement

Fit range 15.0 to 500.0 Hz

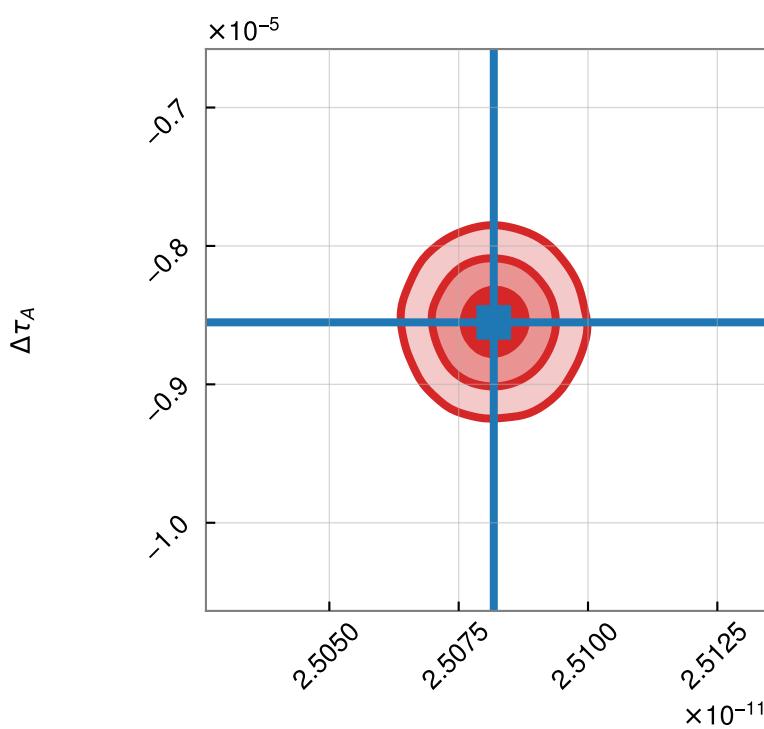
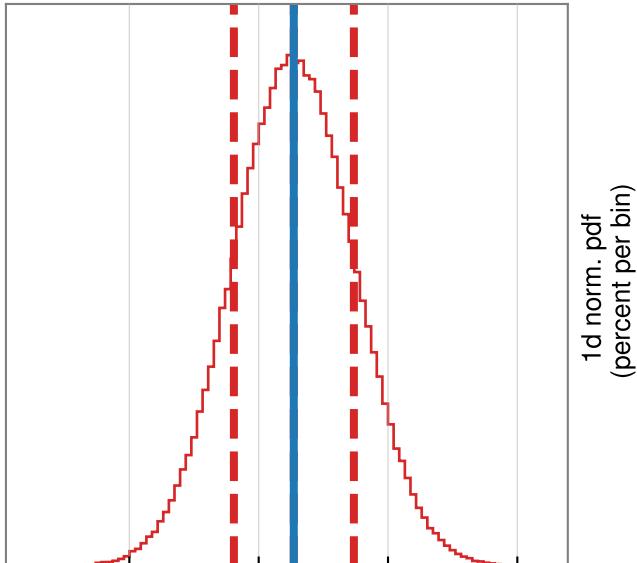


| Parameter | (value +/-) | value | + | - |
|-------------------------------------|-------------|-------|--------------------|--------------------|
| Actuation Gain, Hat (N/V^{**2}) | 2.508e-11 | | 1.162e-14 (0.05%) | 1.158e-14 (0.05%) |
| Residual time delay, tau_A (s) | -8.552e-06 | | 4.595e-07 (-5.37%) | 4.609e-07 (-5.39%) |

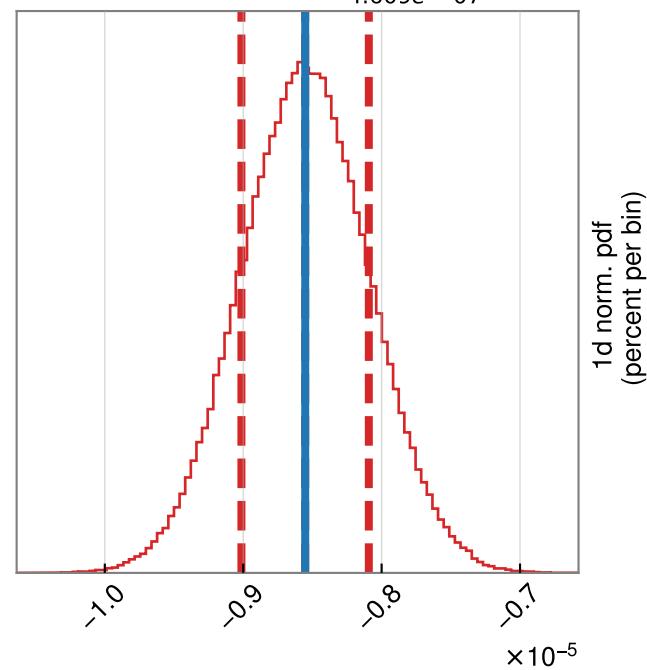
20230517T163635Z EX L3 actuation MCMC corner plot

2d pdf contours
 — 1 σ
 — 2 σ
 — 3 σ
 — map
 (100 bins for 1d pdf)

$$H_{TST} = 2.508e - 11^{+1.162e - 14}_{-1.158e - 14}$$



$$\Delta\tau_A = -8.552e - 06^{+4.595e - 07}_{-4.609e - 07}$$

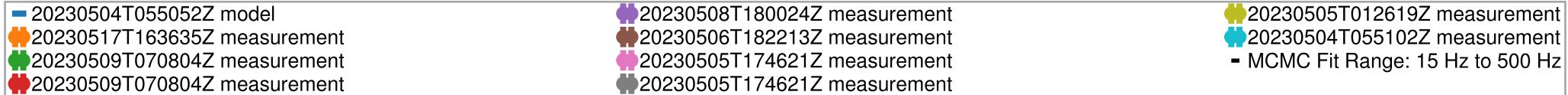


$$H_{TST}$$

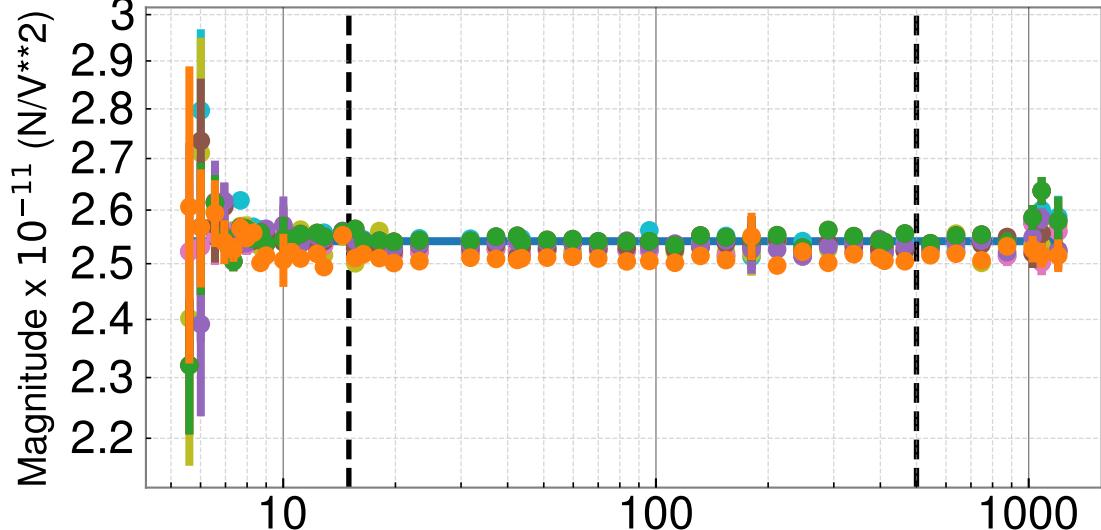
$$\Delta\tau_A$$

H1SUSEX L3 actuation model history

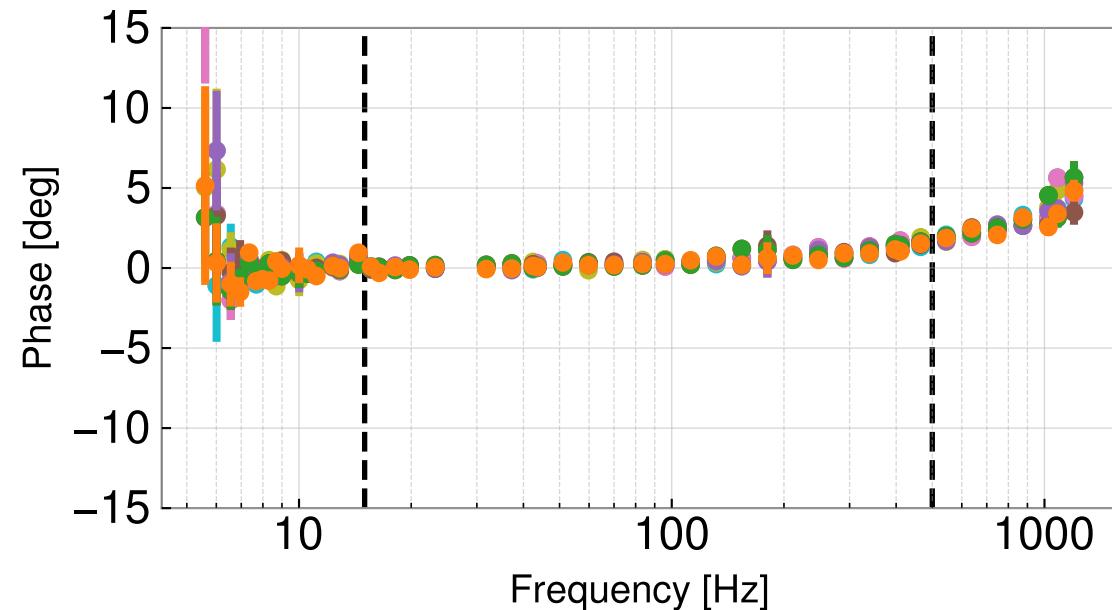
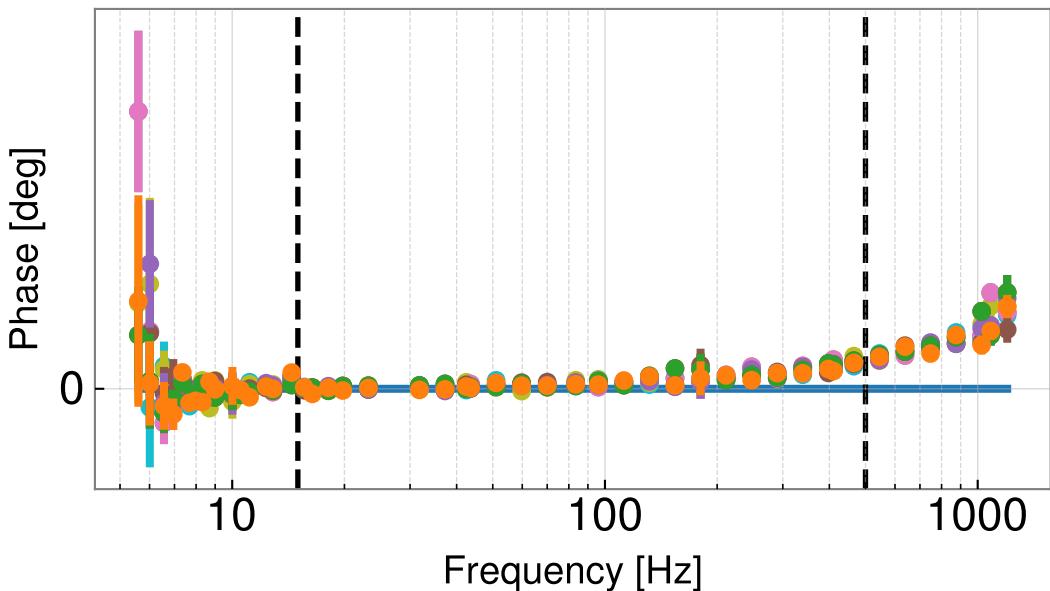
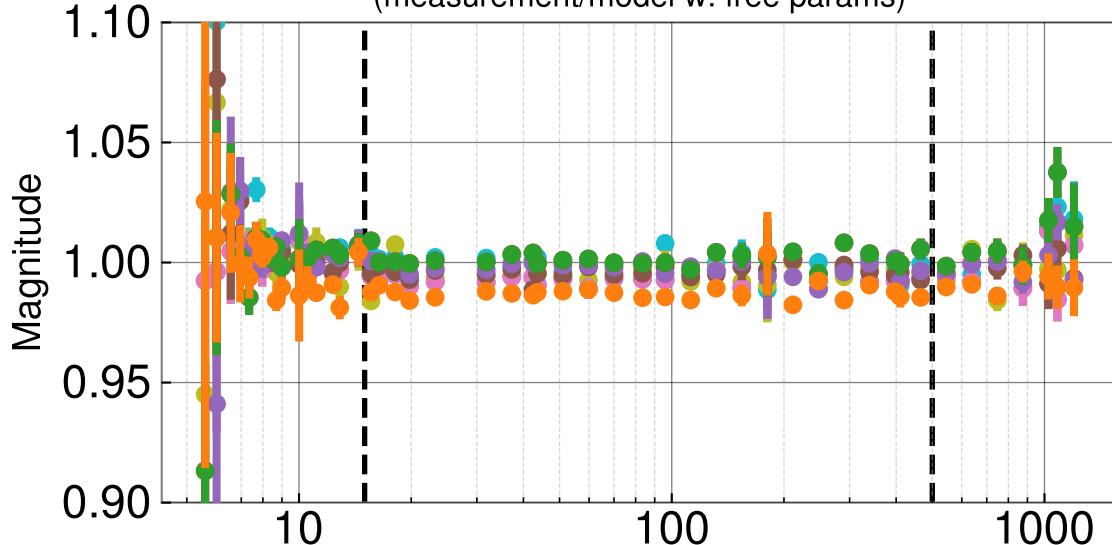
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230517T163625Z/pydarm_H1.ini



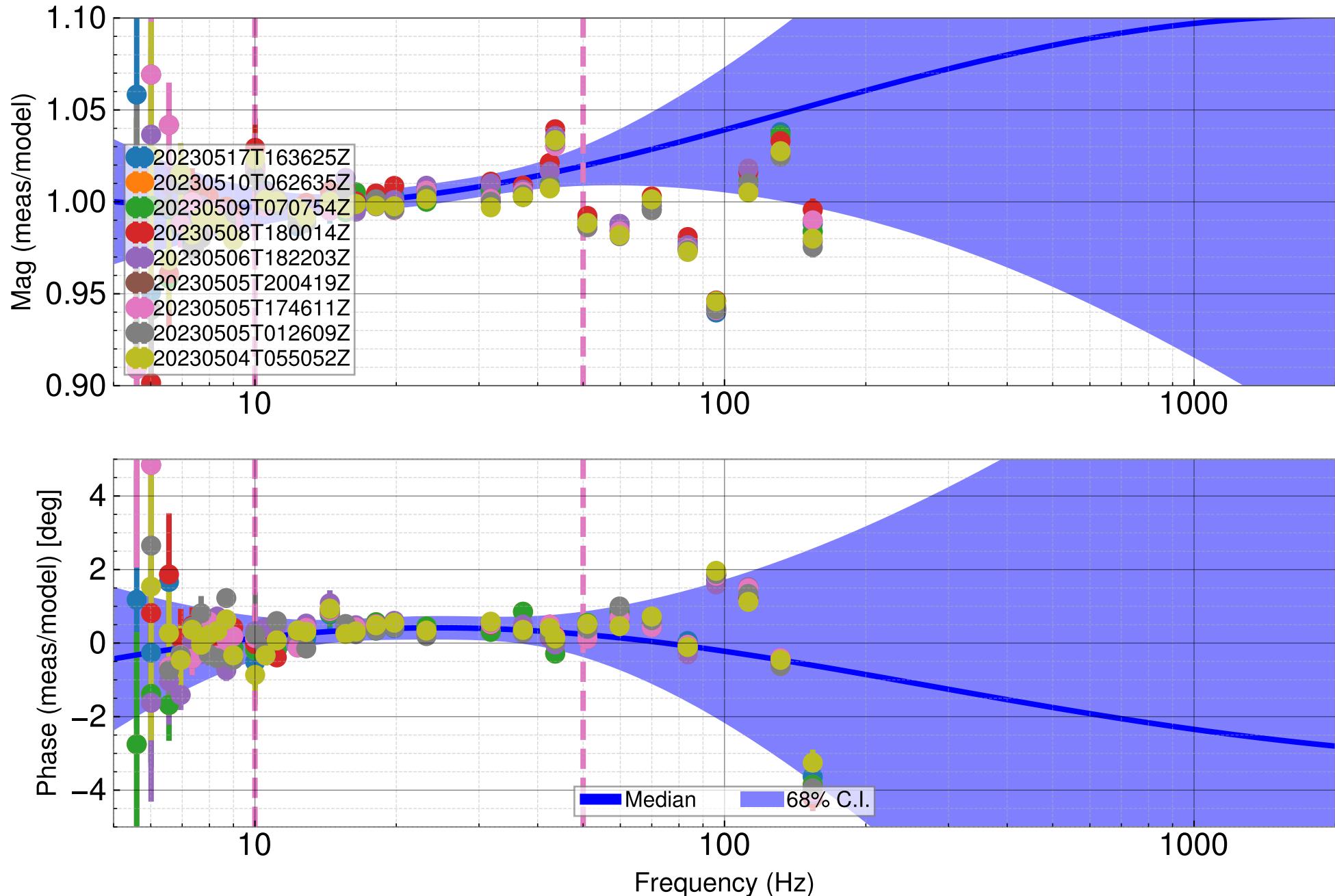
Actuation strength transfer functions
(scaled by H_{ref})



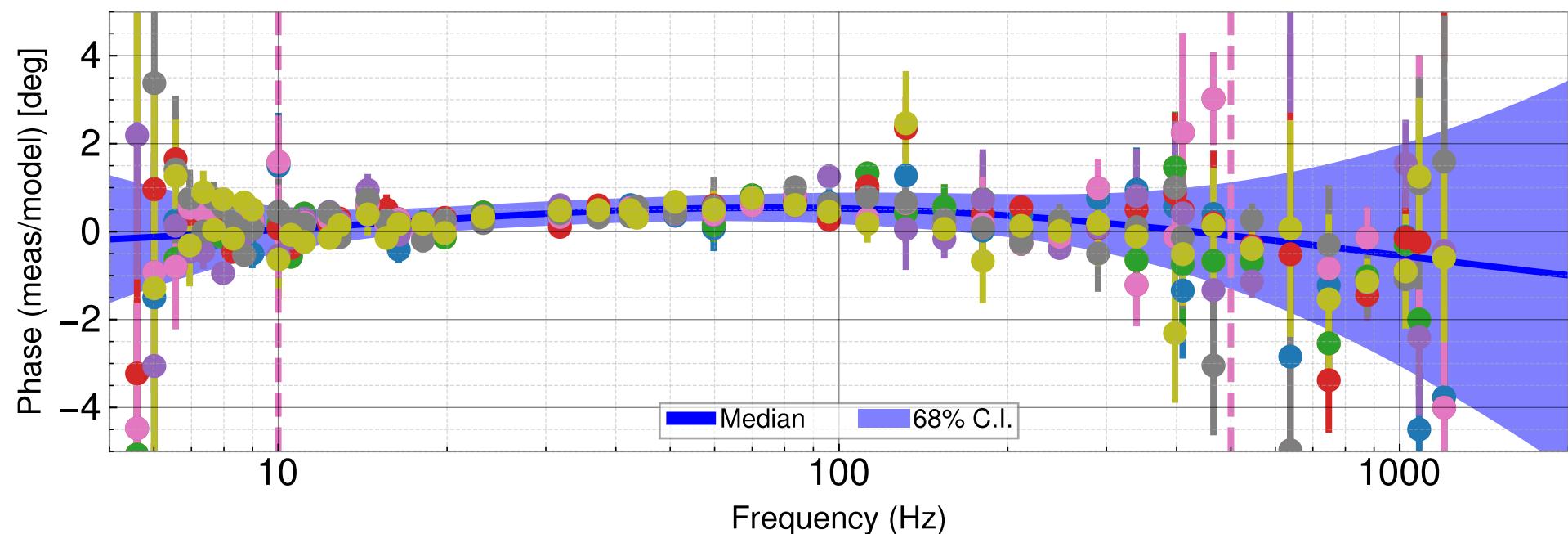
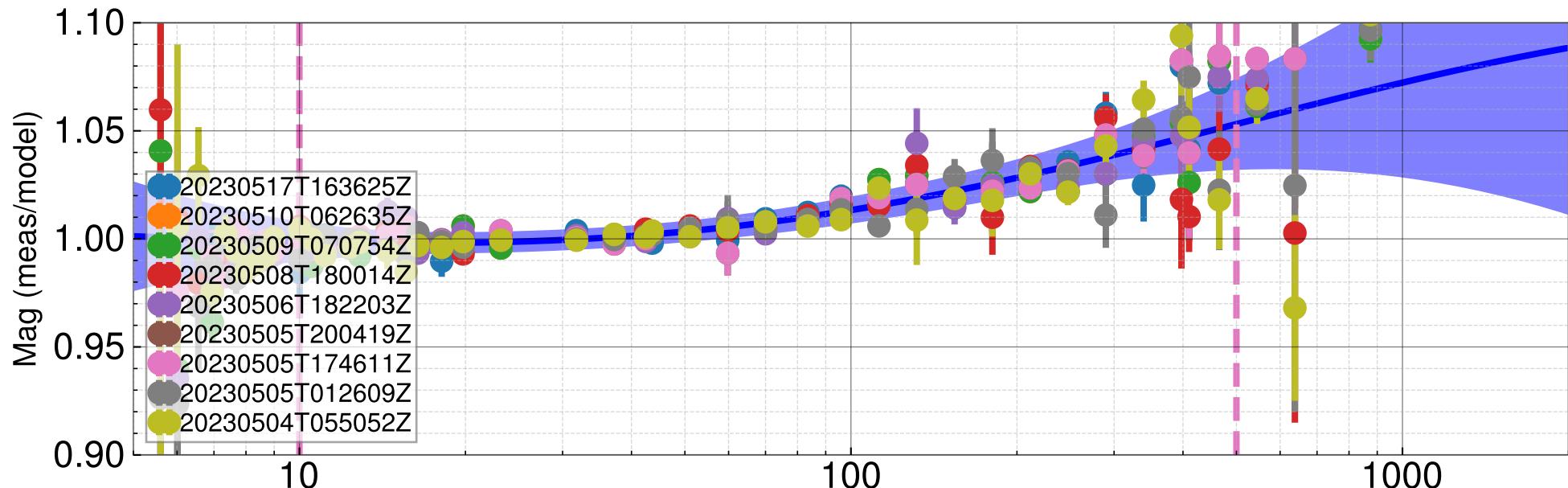
Actuation strength residuals
(measurement/model w. free params)



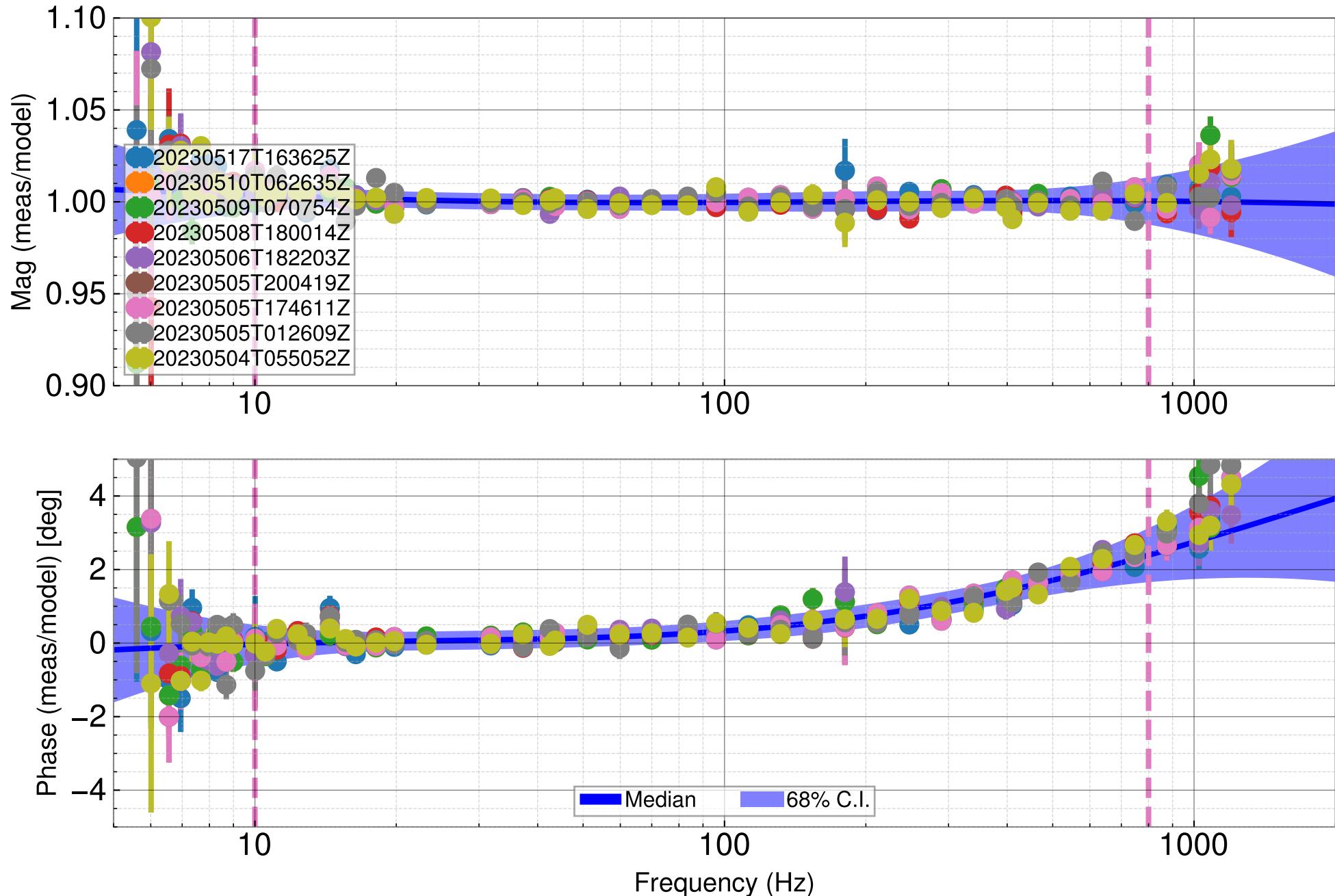
Actuation/L1/EX GPR



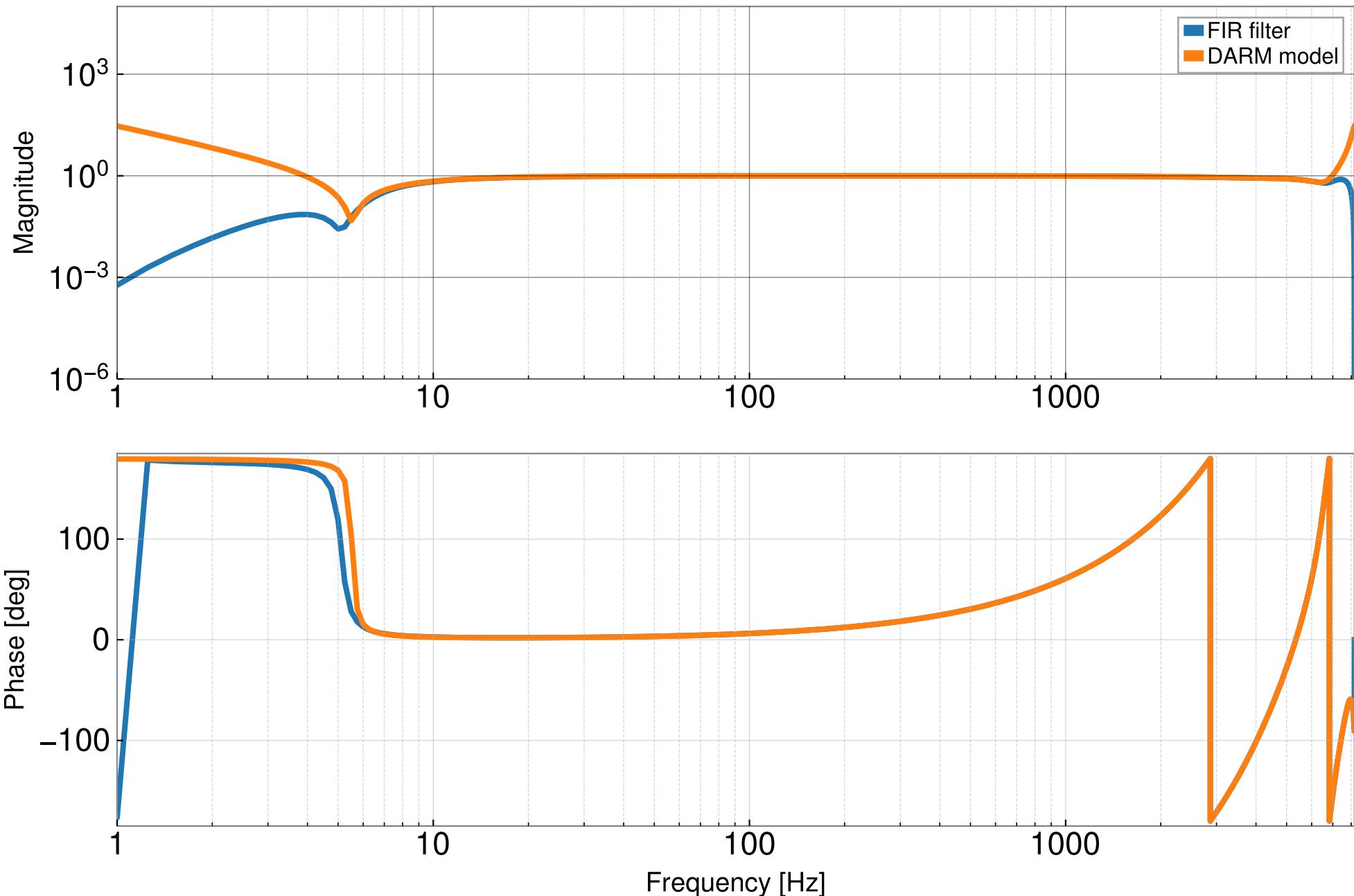
Actuation/L2/EX GPR



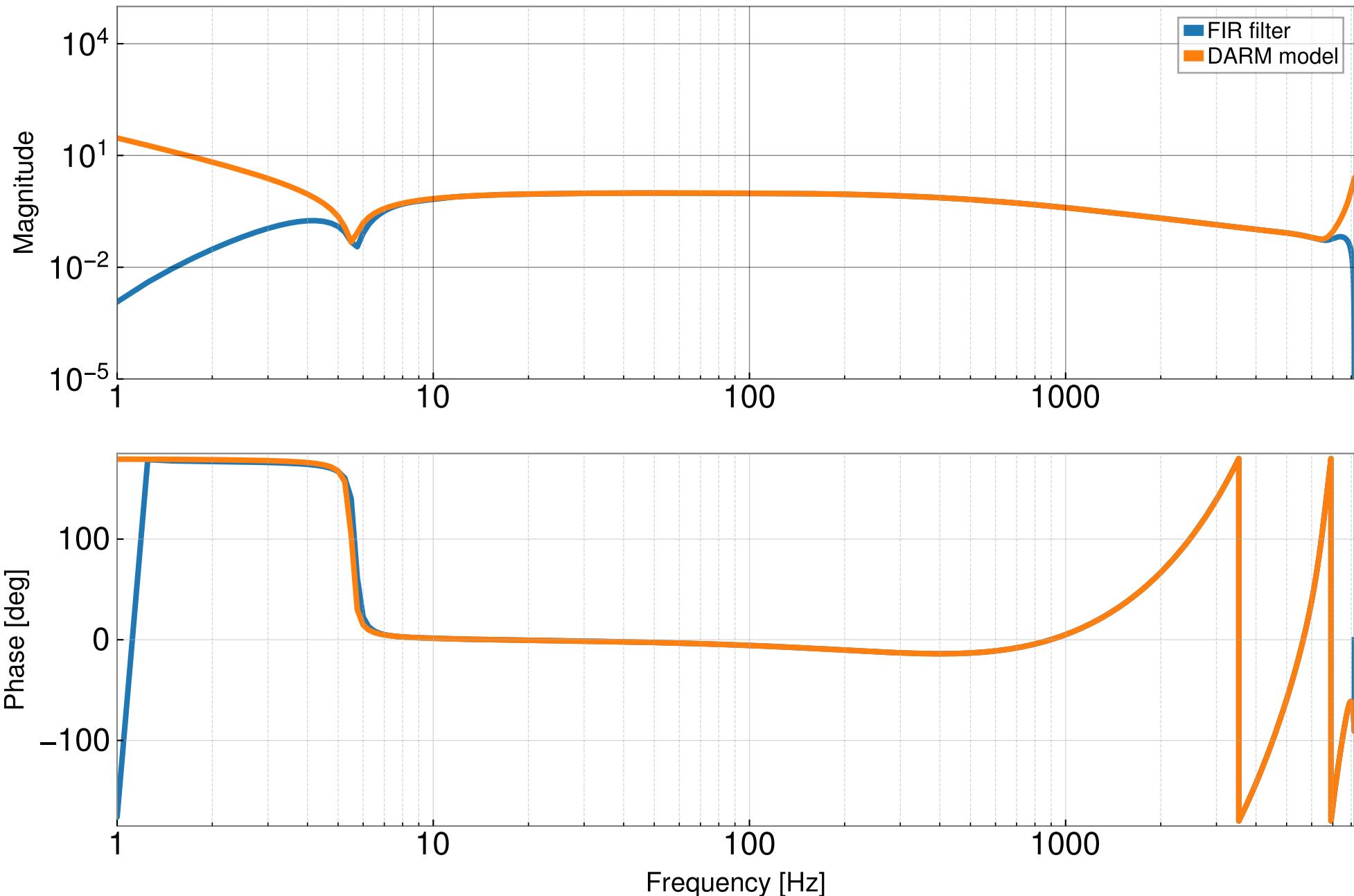
Actuation/L3/EX GPR



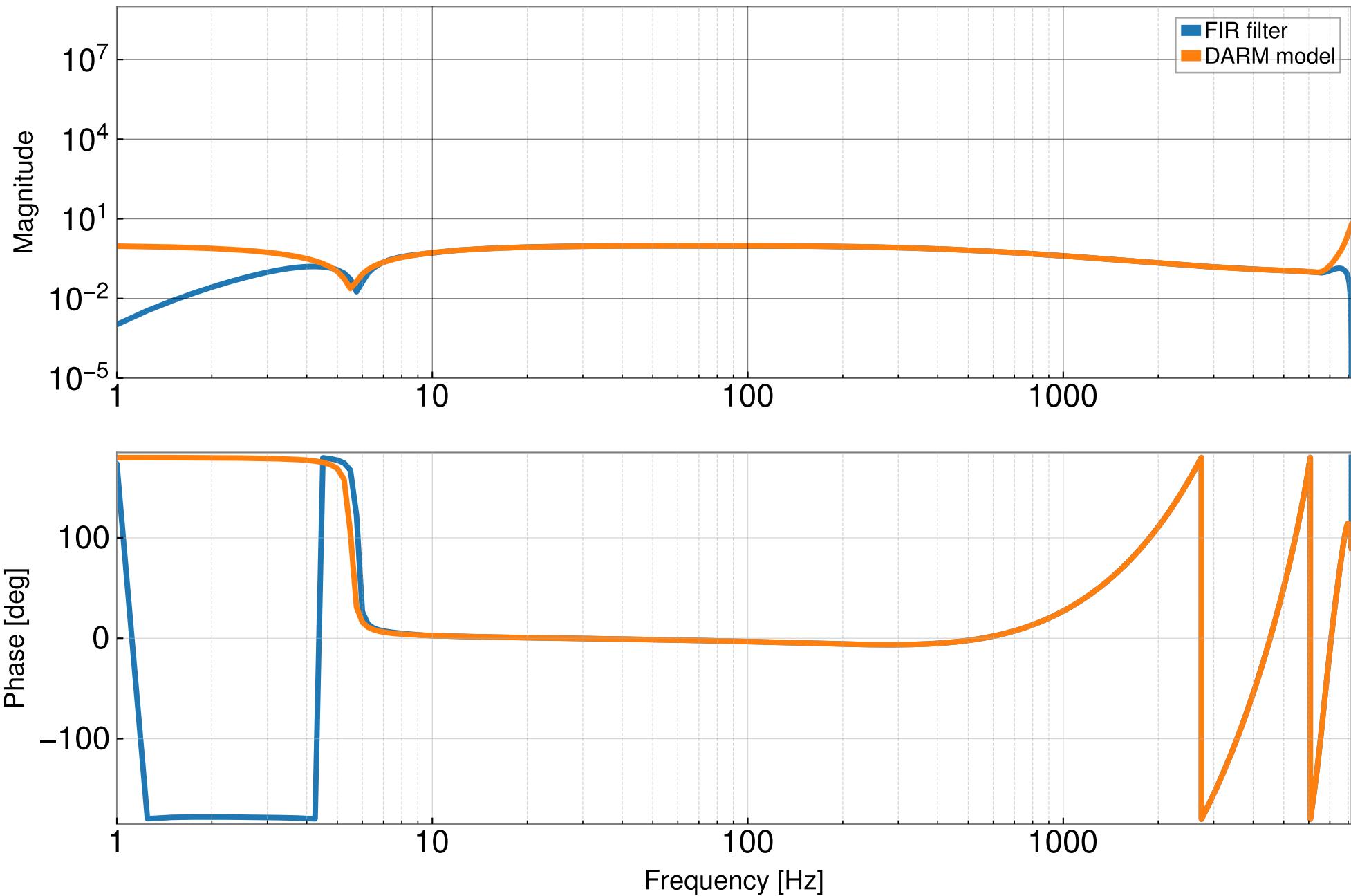
Residual corrections comparison (gstlal__compute__strain__C00__filters__H1)



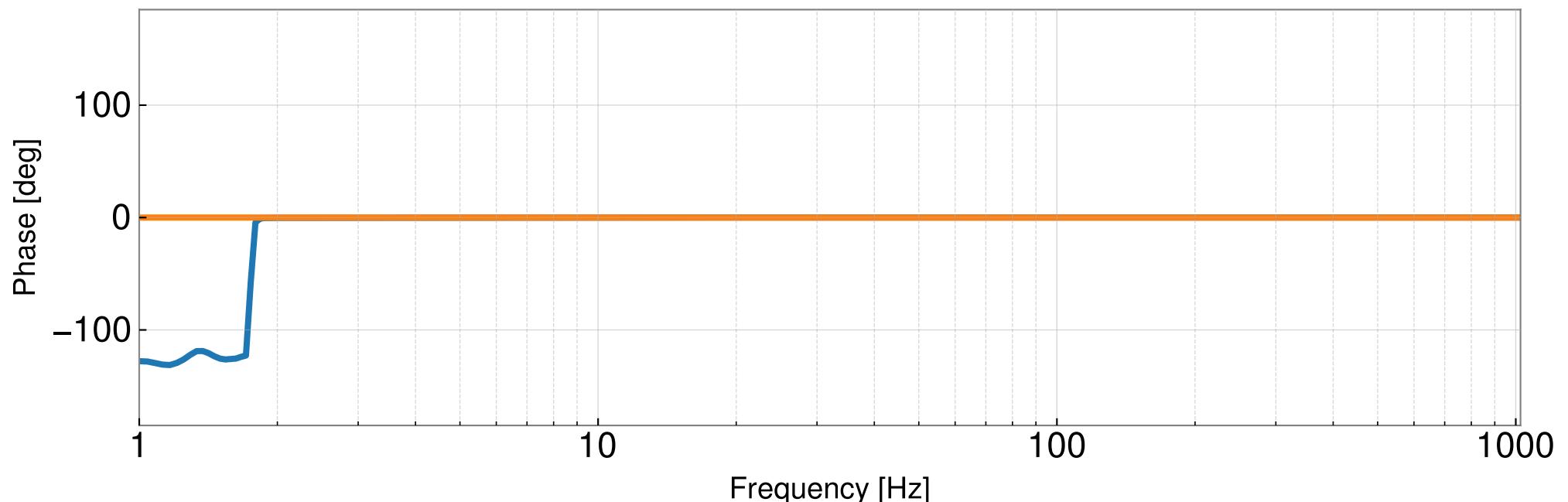
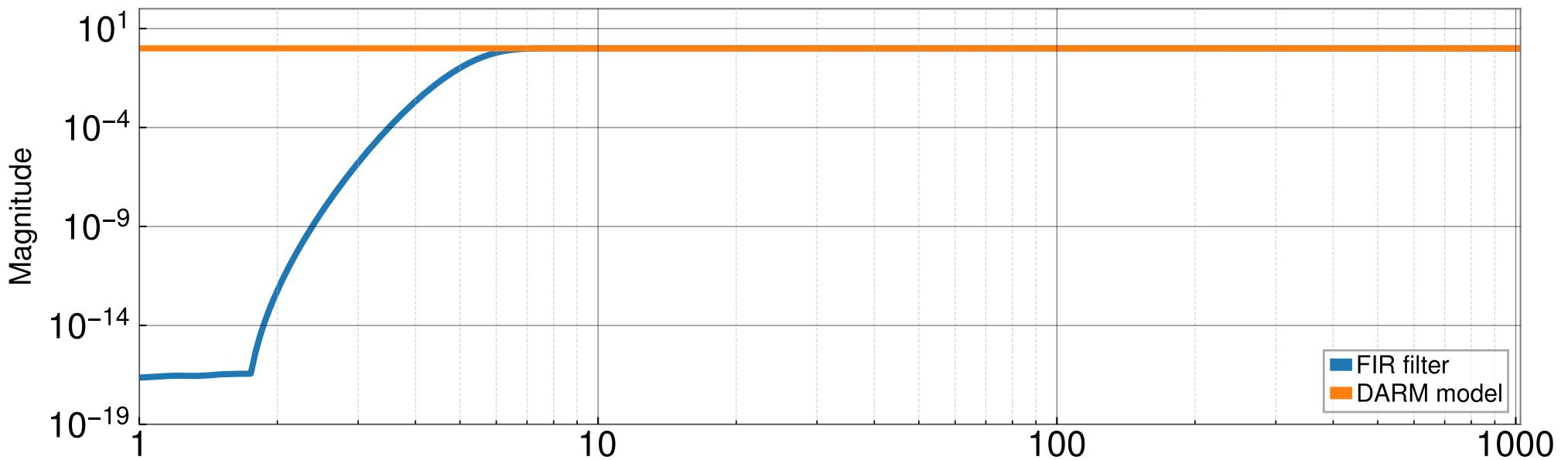
Res Corr No CC Pole comparison (gstlal\compute\strain\C00\filters\H1)



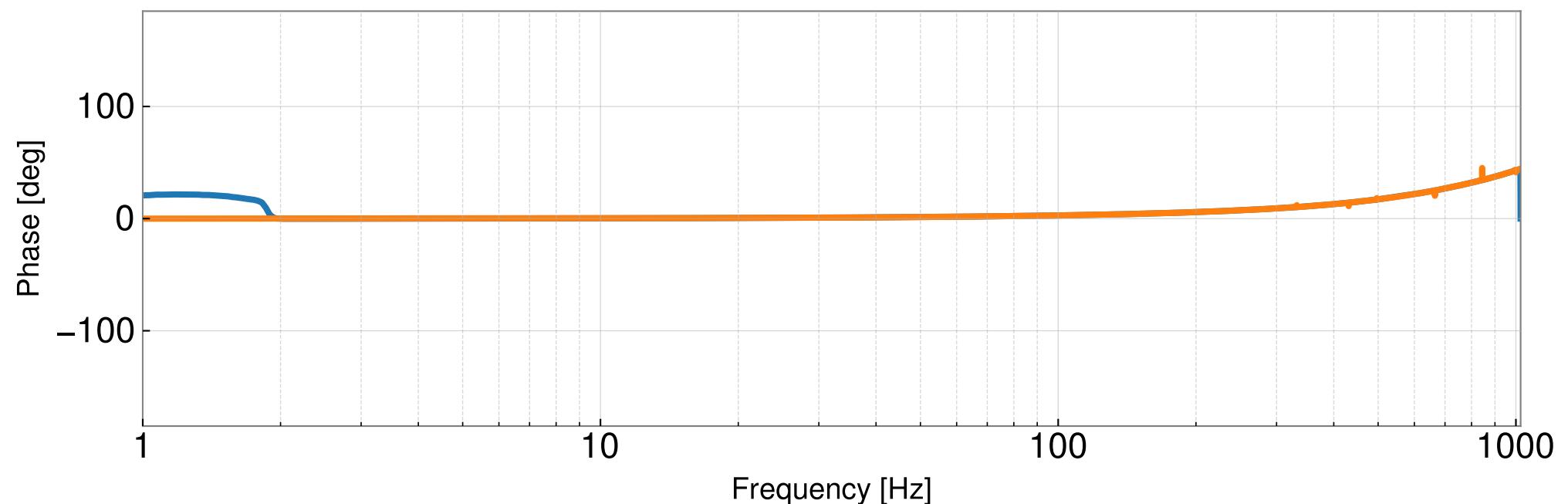
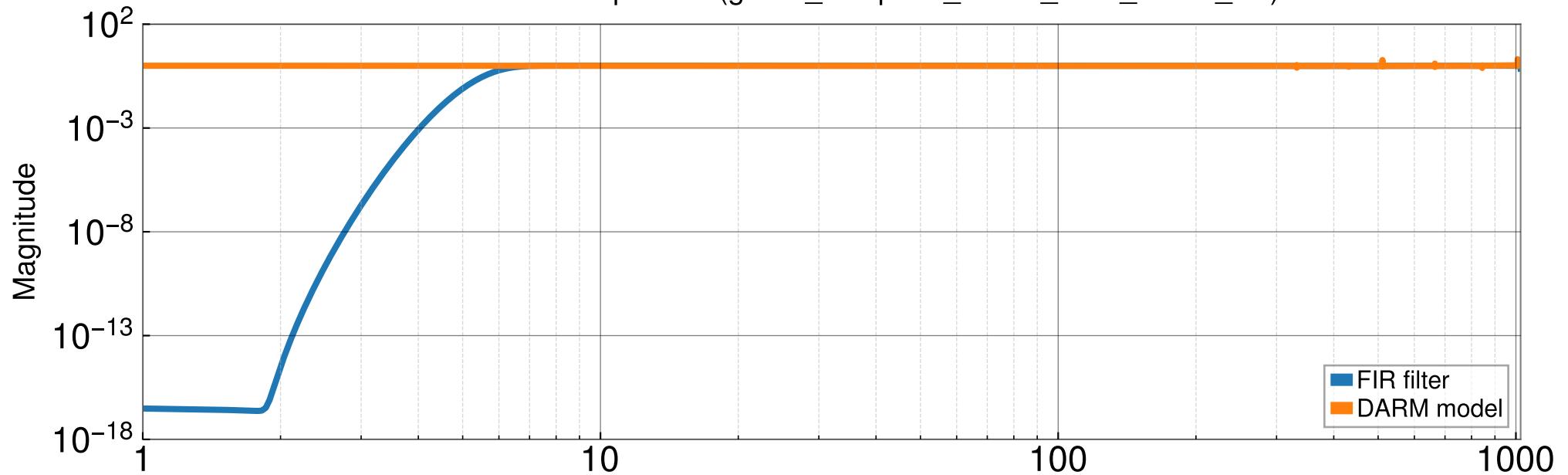
Res Corr No Pole comparison (gstlal\compute\strain\C00\filters_H1)



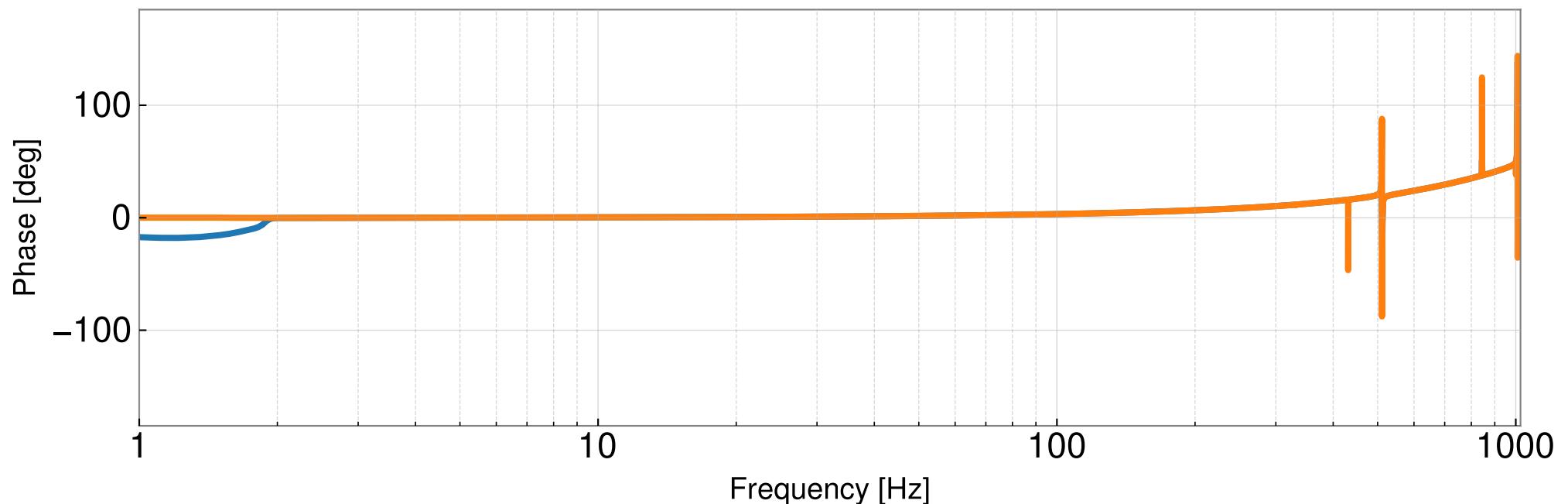
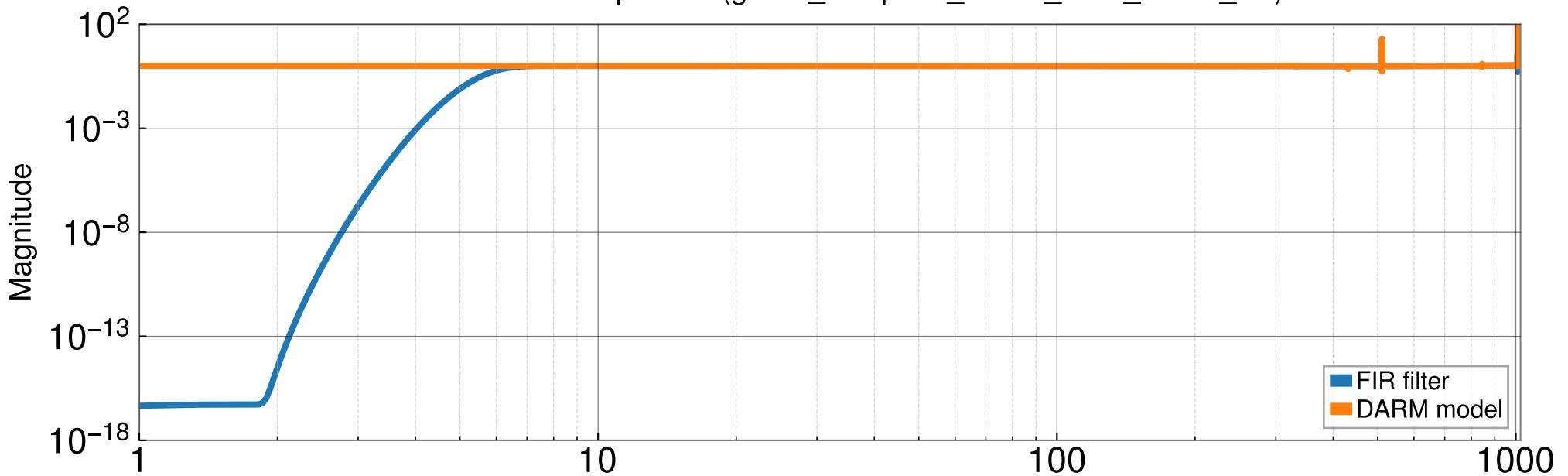
Residual corrections highpass comparison (gstlal\compute\strain\C00\filters\H1)



TST corrections comparison (gstlal\compute\strain_C00\filters\H1)



PUM corrections comparison (gstlal\compute\strain\C00\filters\H1)



UIM corrections comparison (gstlal\compute\strain_C00\filters\H1)

