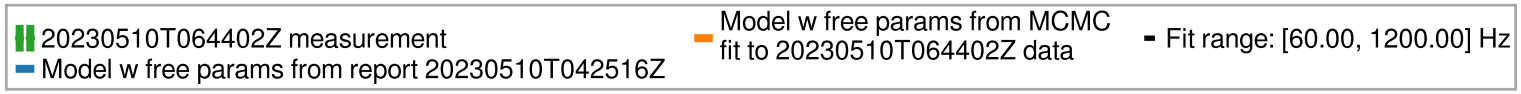
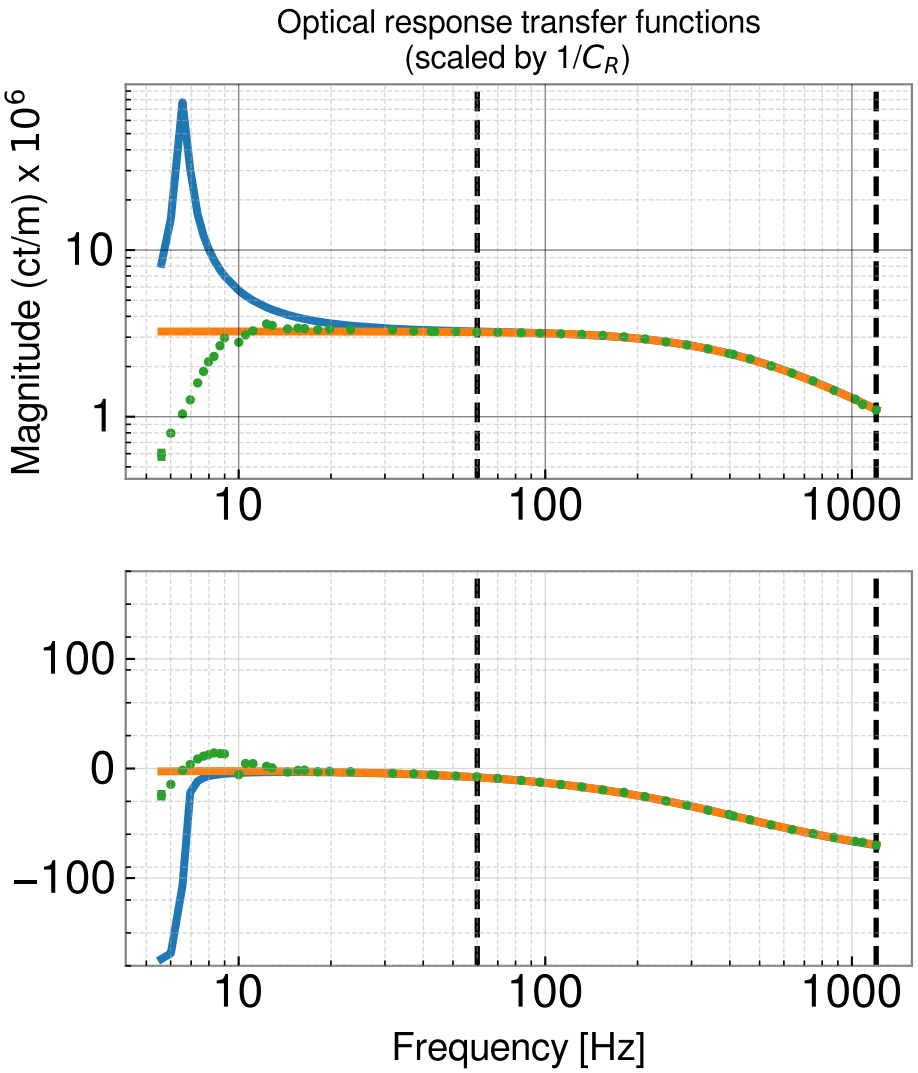
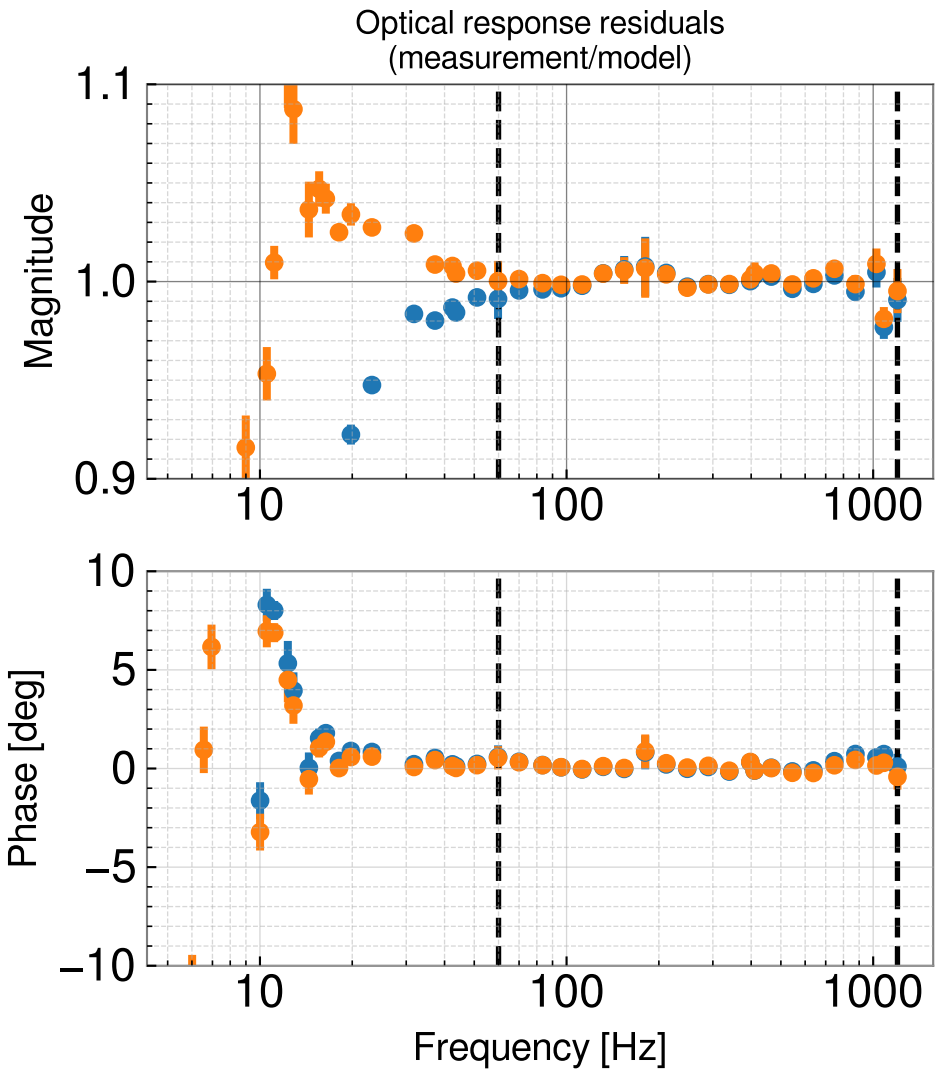
H1 sensing model MCMC summary

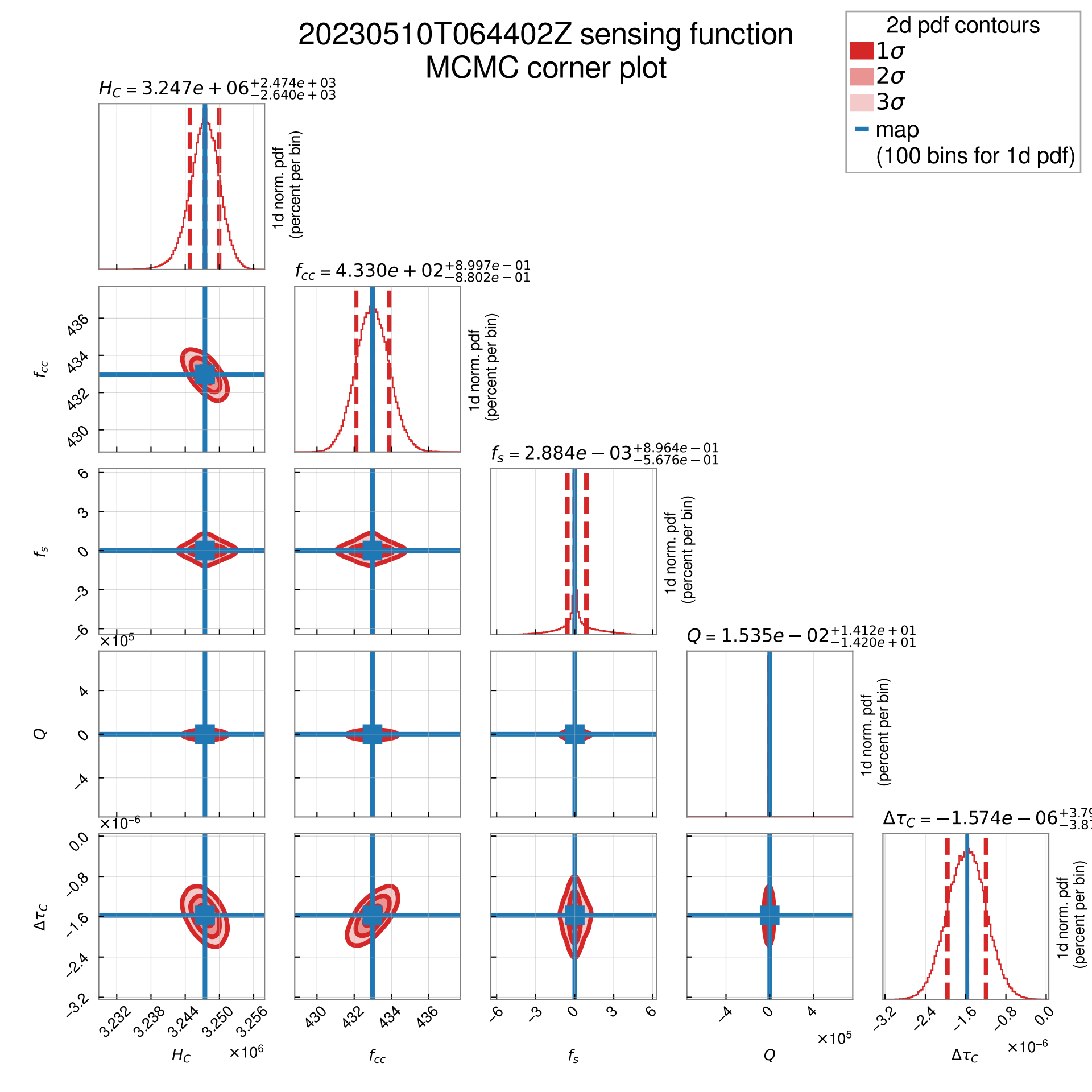
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230510T062635Z/pydarm_H1.ini







Parameter (value +/-)	value	+	-
Optical gain, H_c (ct/m)	3.247e+06	2474 (0.08%)	2640 (0.08%)
Cavity_pole, f_cc (Hz)	433	0.8997 (0.21%)	0.8802 (0.20%)
Detuned SRC spring frequency, f_s (Hz)	0.002884	0.8964 (31078.85%)	0.5676 (19677.01%)
Detuned SRC spring quality factor, Q_s	0.01535	14.12 (92032.40%)	14.2 (92512.05%)
Residual time delay, tau_c (s)	-1.574e-06	3.797e-07 (-24.12%)	3.878e-07 (-24.63%)

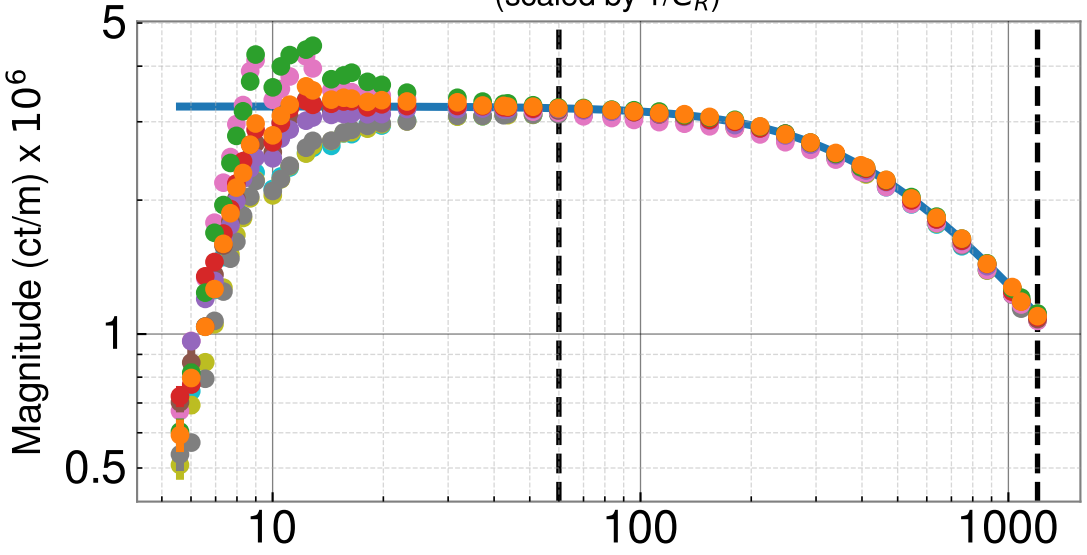

20230510T064402Z sensing function
MCMC corner plot
2d pdf contours
1σ
2σ
3σ
map
(100 bins for 1d pdf)
$H_C = 3.247e+06^{+2.474e+03}_{-2.640e+03}$
$f_{cc} = 4.330e+02^{+8.997e-01}_{-8.802e-01}$
$f_s = 2.884e-03^{+8.964e-01}_{-5.676e-01}$
$Q = 1.535e-02^{+1.412e+01}_{-1.420e+01}$
$\Delta\tau_C = -1.574e-06^{+3.79}_{-3.8}$
1d norm. pdf
(percent per bin)
H_C
f_{cc}
f_s
Q
$\Delta\tau_C$
×10^6
×10^5
×10^-6

H1 sensing model history

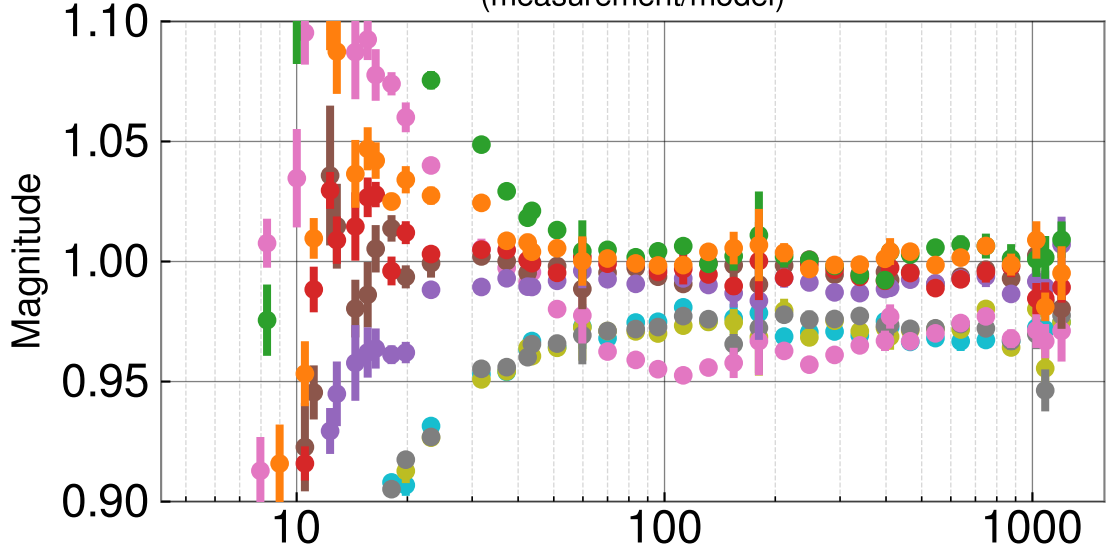
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230510T062635Z/pydarm_H1.ini

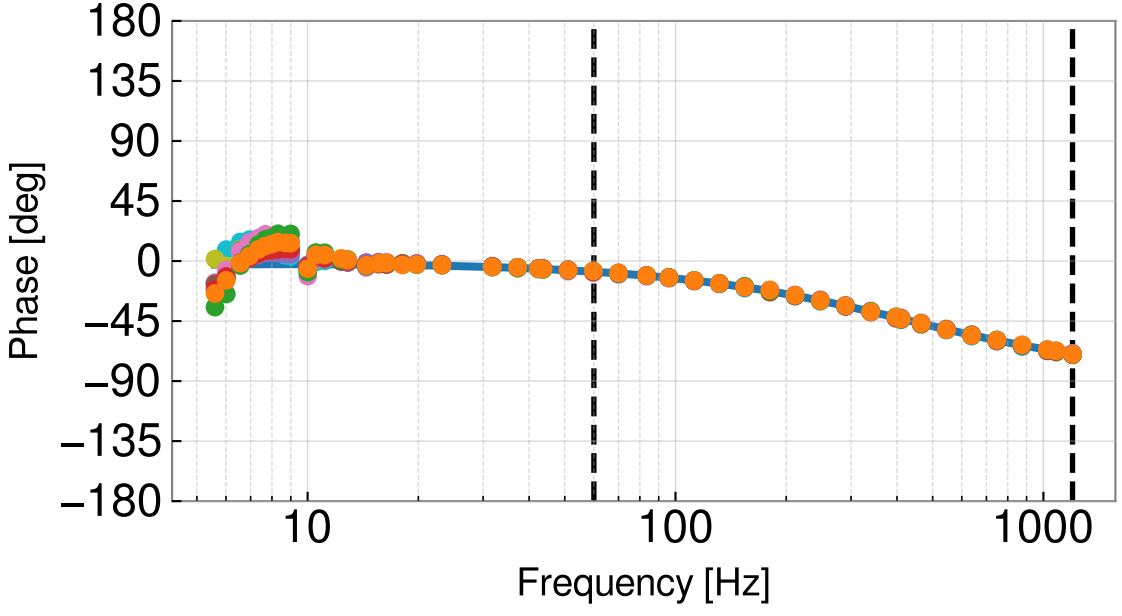
20230510T042516Z model
20230510T042516Z measurement
20230509T070754Z measurement
20230508T180014Z measurement
20230506T182203Z measurement
20230505T200419Z measurement
20230505T174611Z measurement
20230505T012609Z measurement
20230504T055052Z measurement
Fit range: [60.00, 1200.00] Hz

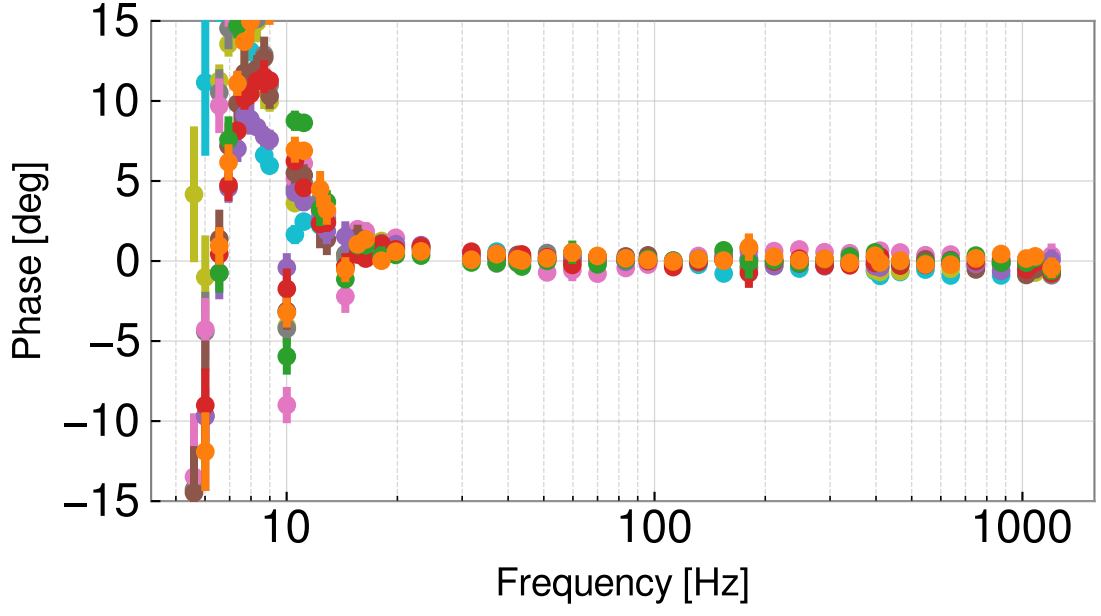
Optical response transfer functions
(scaled by $1/C_R$)

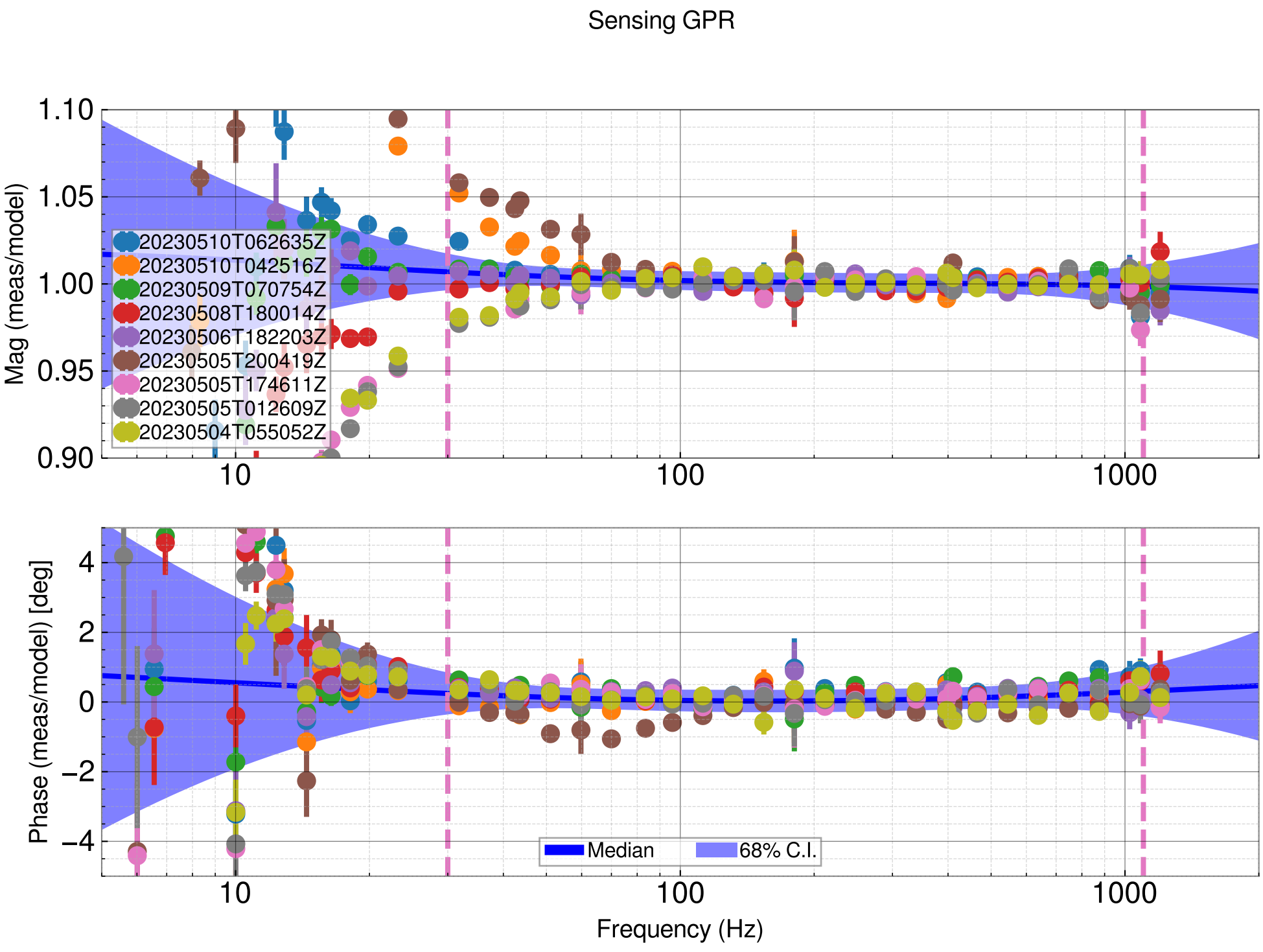


Optical response residuals
(measurement/model)



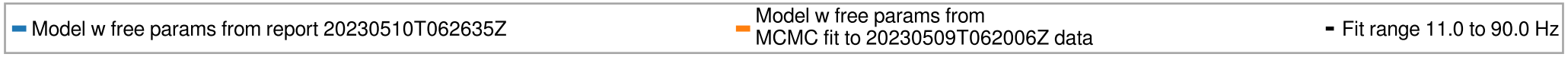


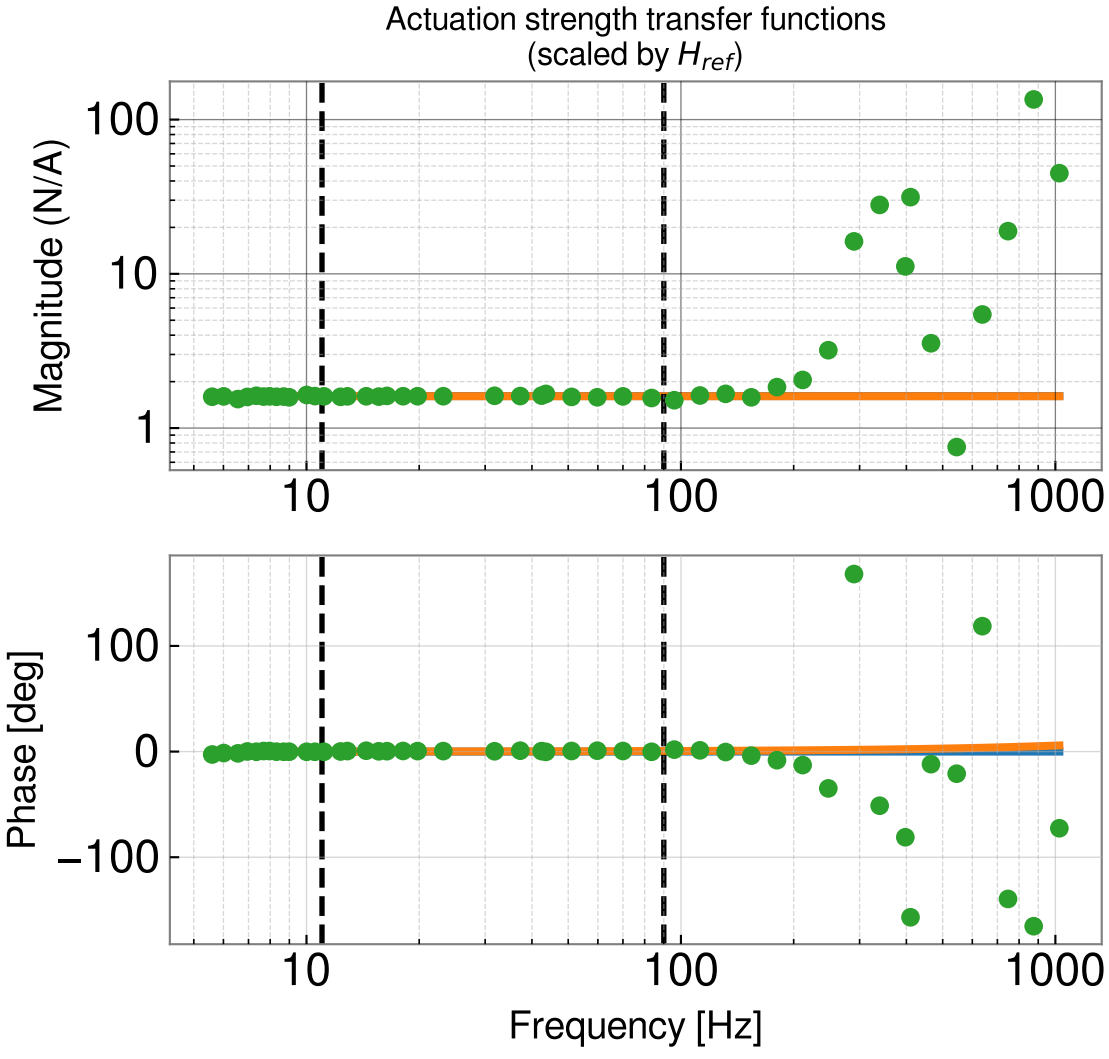


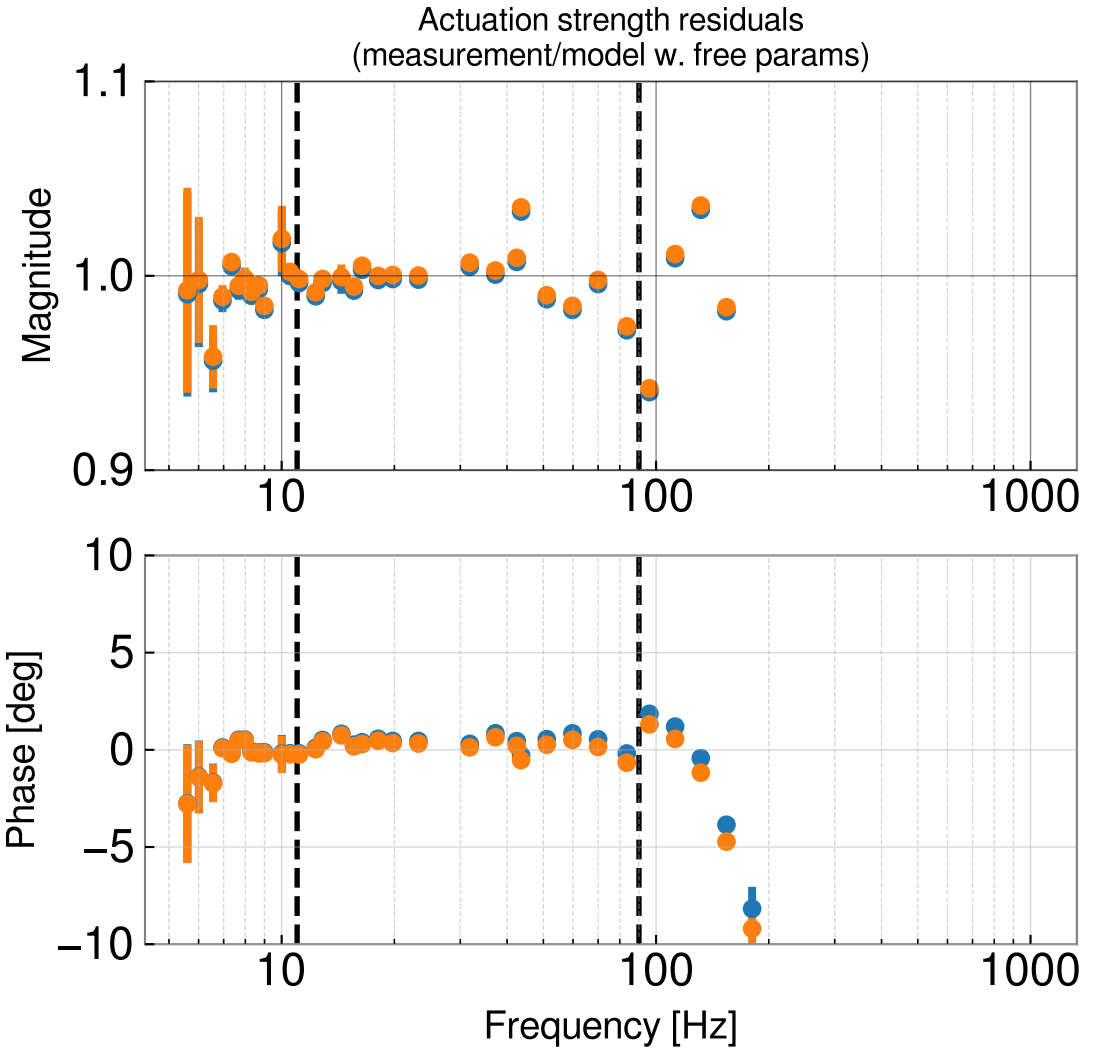

Sensing GPR
Mag (meas/model)
1.10
1.05
1.00
0.95
0.90
20230510T062635Z
20230510T042516Z
20230509T070754Z
20230508T180014Z
20230506T182203Z
20230505T200419Z
20230505T174611Z
20230505T012609Z
20230504T055052Z
10
100
1000
Phase (meas/model) [deg]
4
2
0
−2
−4
Median
68% C.I.
10
100
1000
Frequency (Hz)

H1SUSEX L1 actuation model MCMC summary

All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230510T062635Z/pydarm_H1.ini

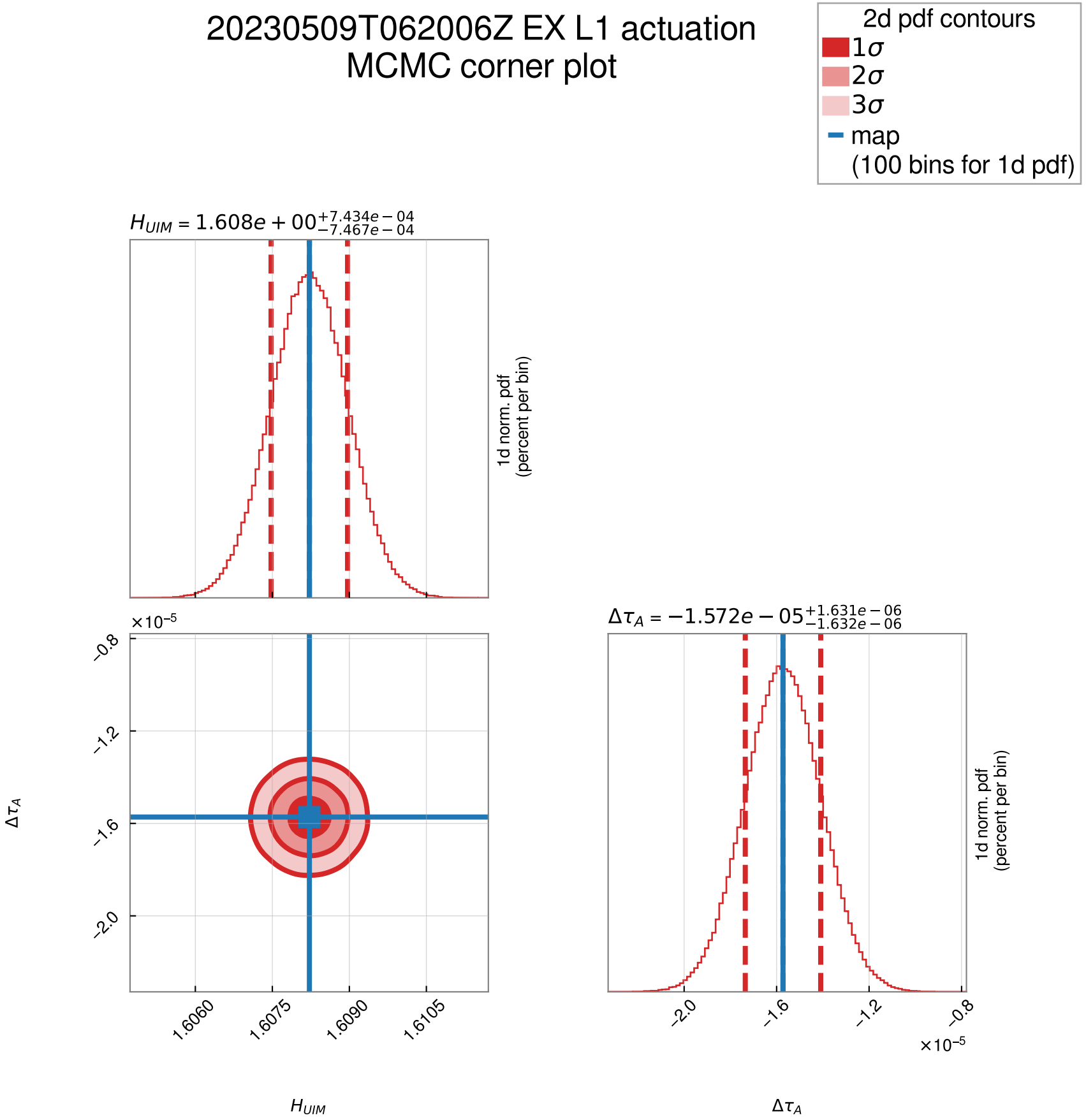






Parameter (value +/-)	value	+	-
Actuation Gain, Hau (N/A)	1.608	0.0007434 (0.05%)	0.0007467 (0.05%)
Residual time delay, tau_A (s)	-1.572e-05	1.631e-06 (-10.37%)	1.632e-06 (-10.38%)

20230509T062006Z EX L1 actuation
MCMC corner plot

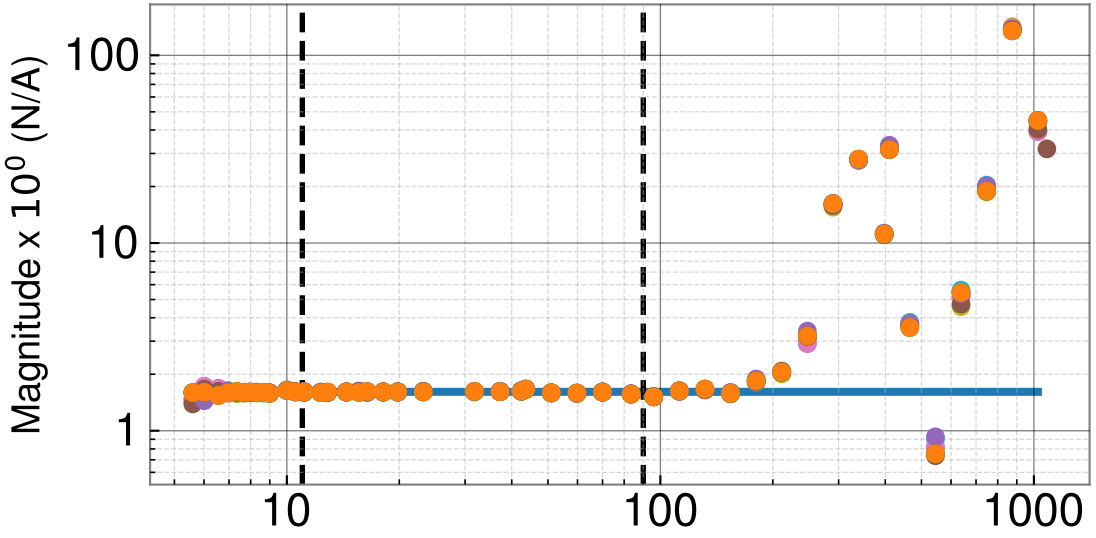


H1SUSEX L1 actuation model history

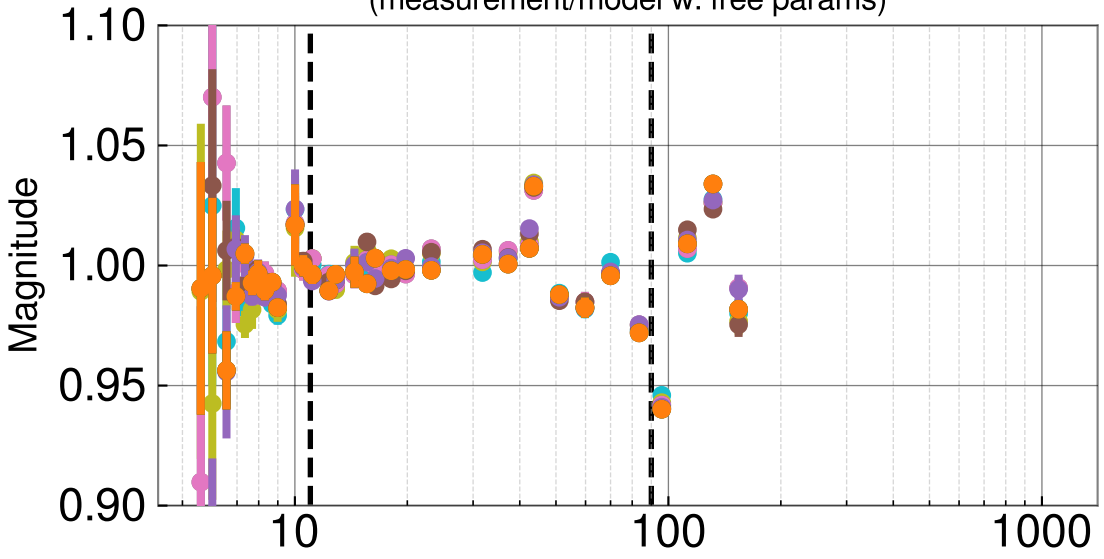
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230510T062635Z/pydarm_H1.ini

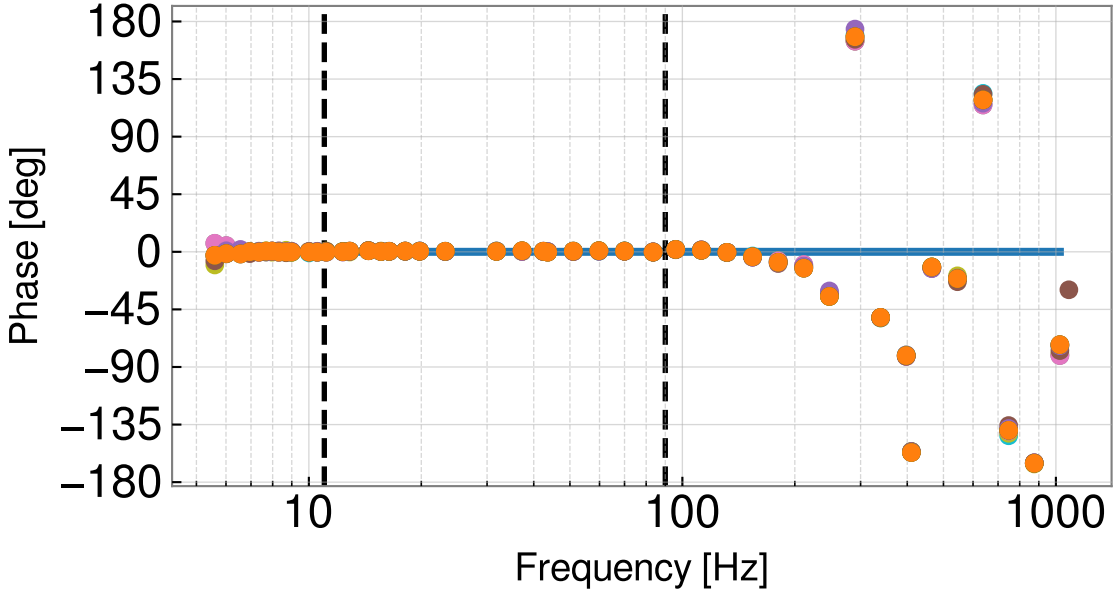
20230510T042516Z model
20230509T062006Z measurement
20230509T062006Z measurement
20230509T062006Z measurement
20230508T171226Z measurement
20230506T173415Z measurement
20230505T165823Z measurement
20230505T165823Z measurement
20230505T003821Z measurement
20230504T050304Z measurement
MCMC Fit Range: 11 Hz to 90 Hz

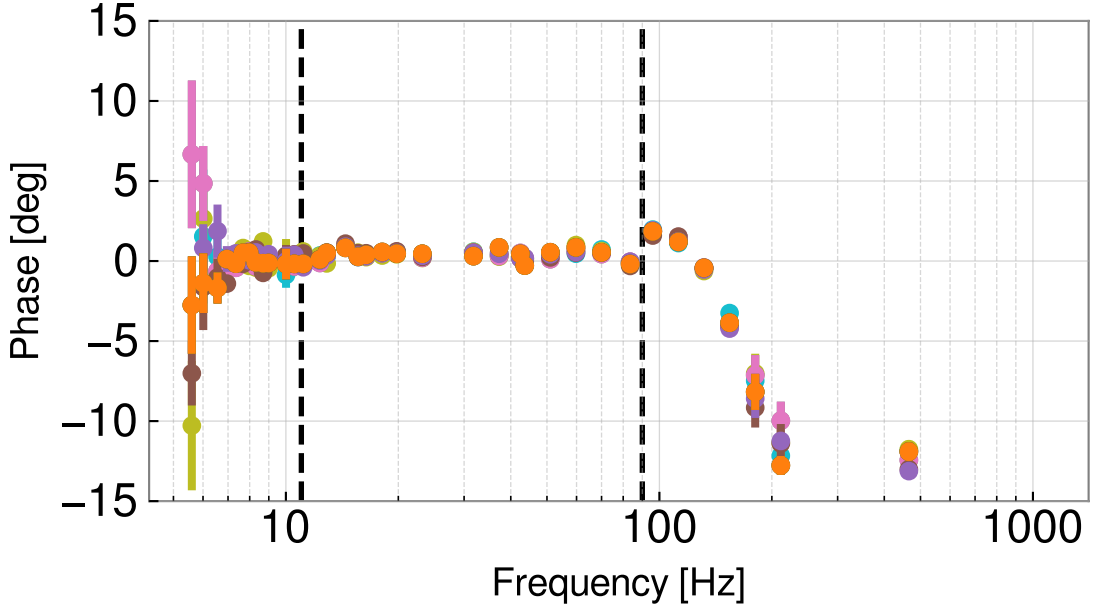
Actuation strength transfer functions
(scaled by H_{ref})



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

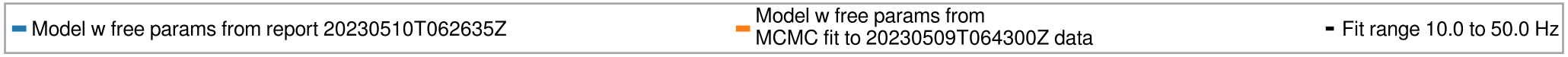


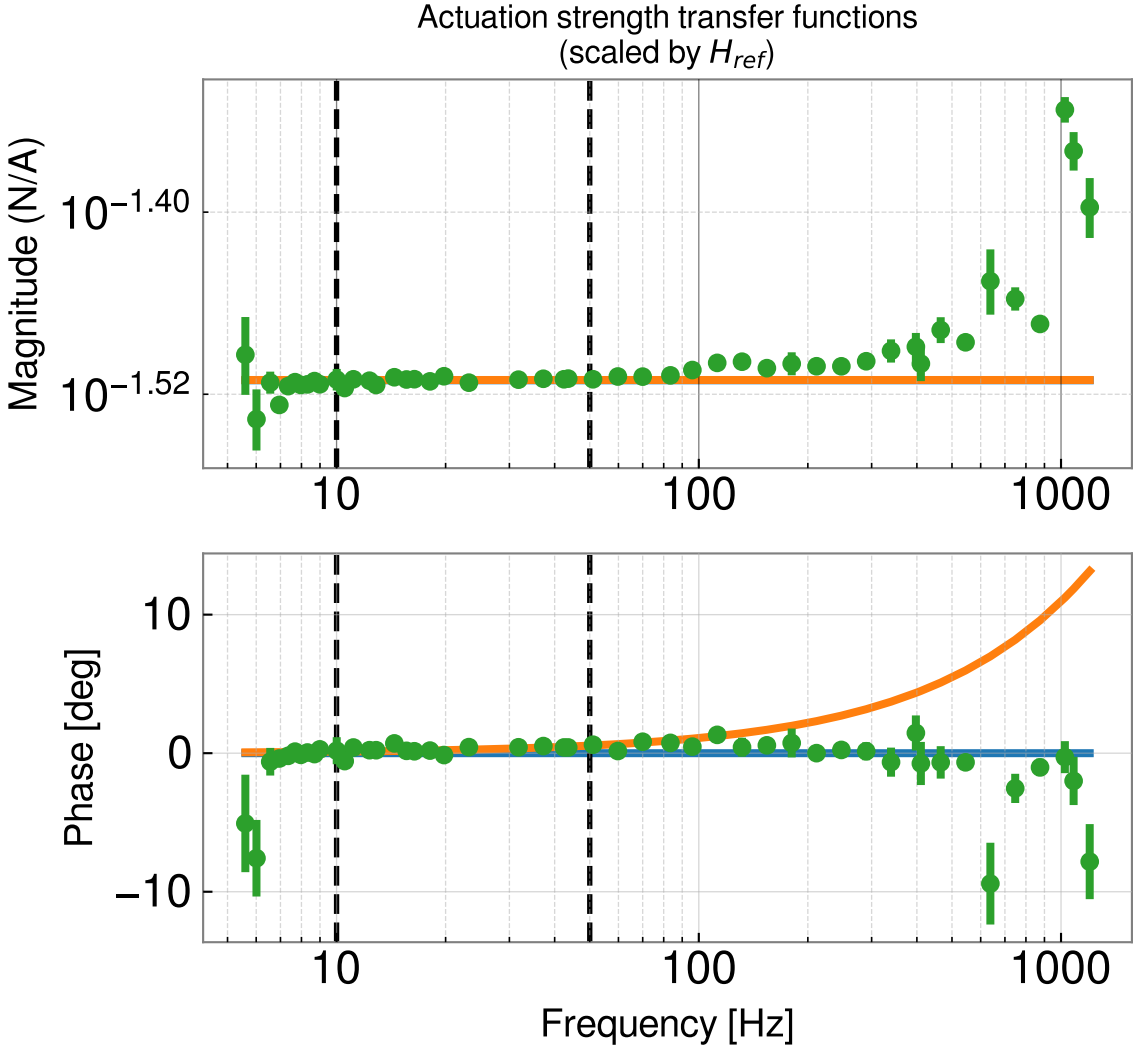


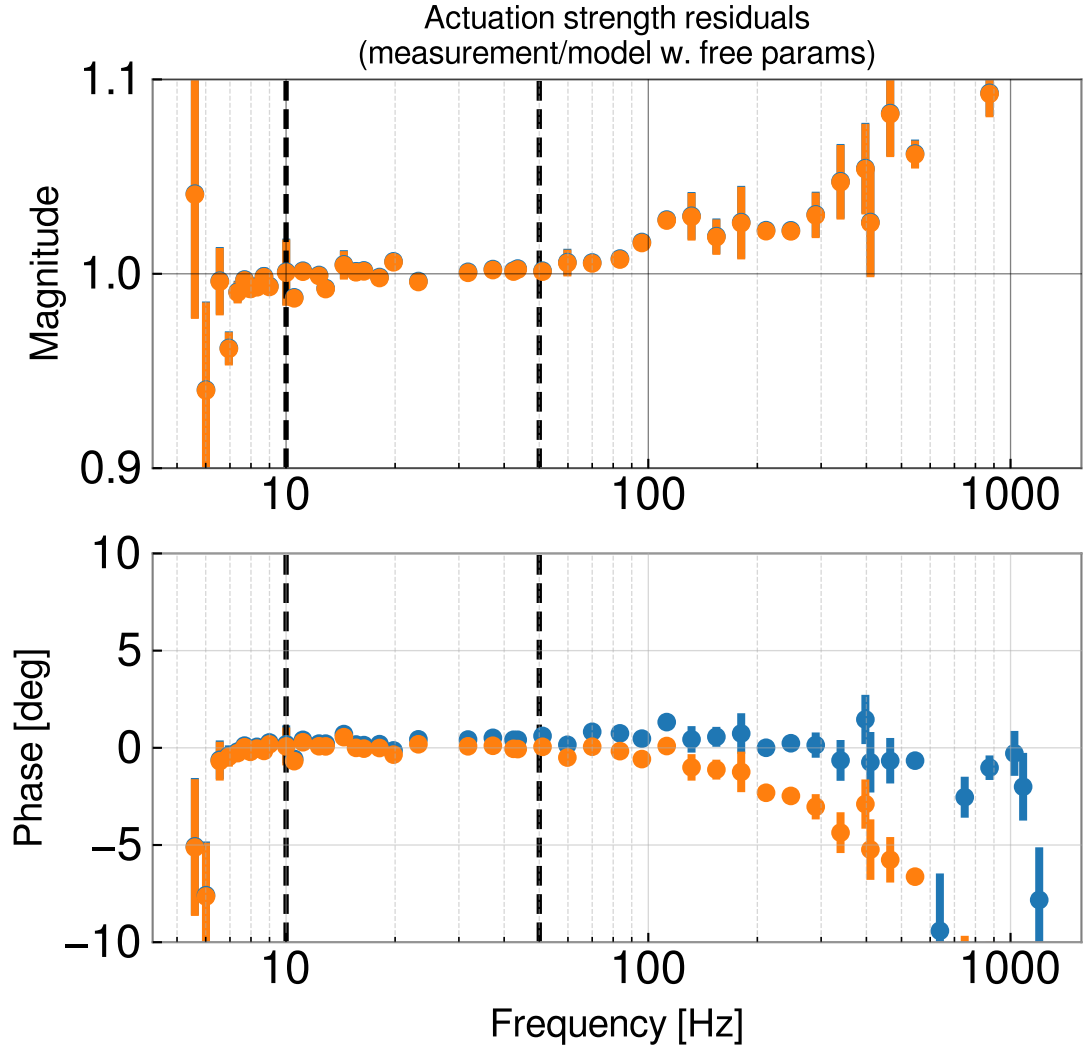


H1SUSEX L2 actuation model MCMC summary

All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230510T062635Z/pydarm_H1.ini

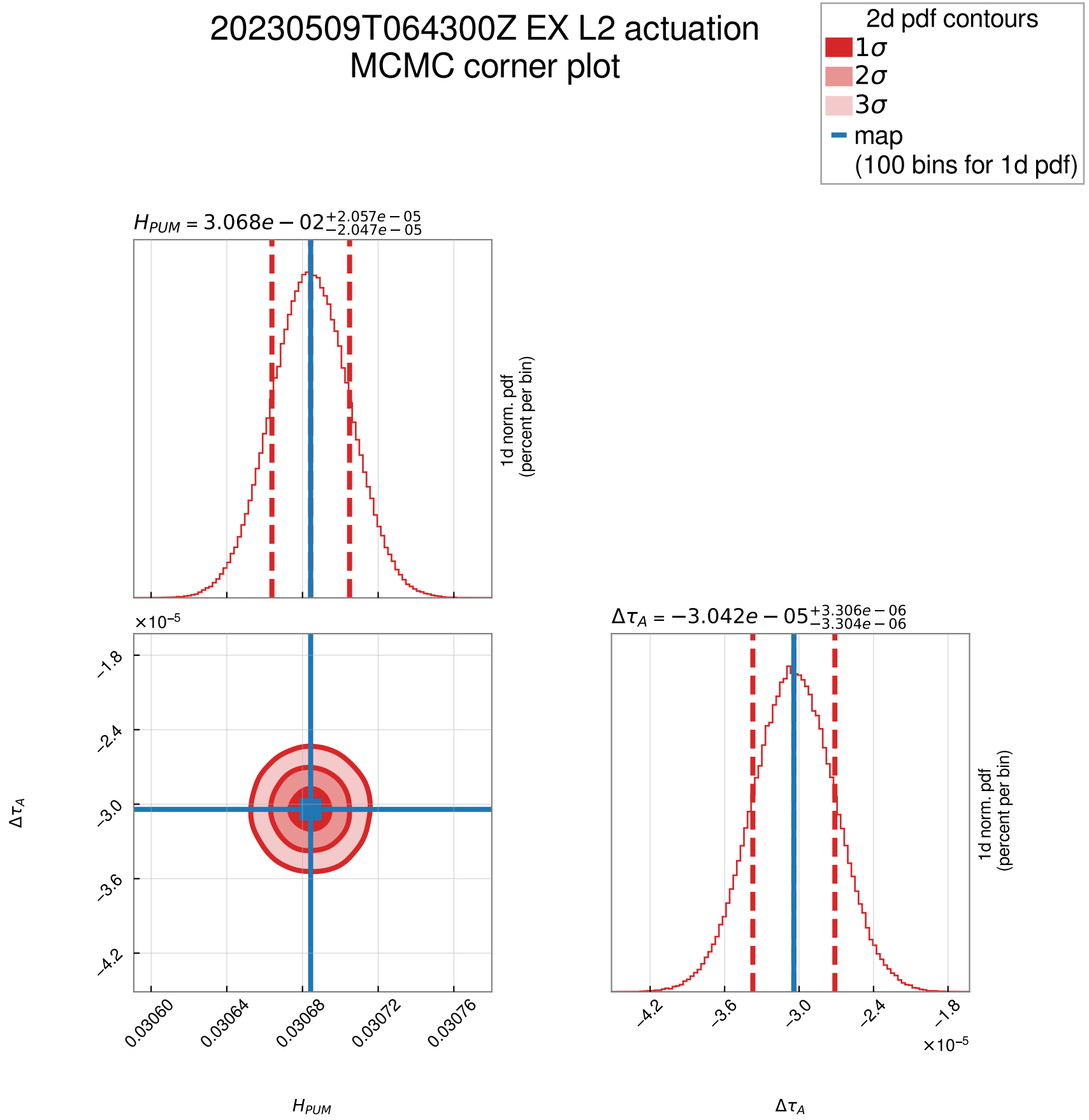






Parameter	(value +/-)	value	+	-
Actuation Gain, Hap (N/A)		0.03068	2.057e-05 (0.07%)	2.047e-05 (0.07%)
Residual time delay, tau_A (s)		-3.042e-05	3.306e-06 (-10.87%)	3.304e-06 (-10.86%)

20230509T064300Z EX L2 actuation
MCMC corner plot

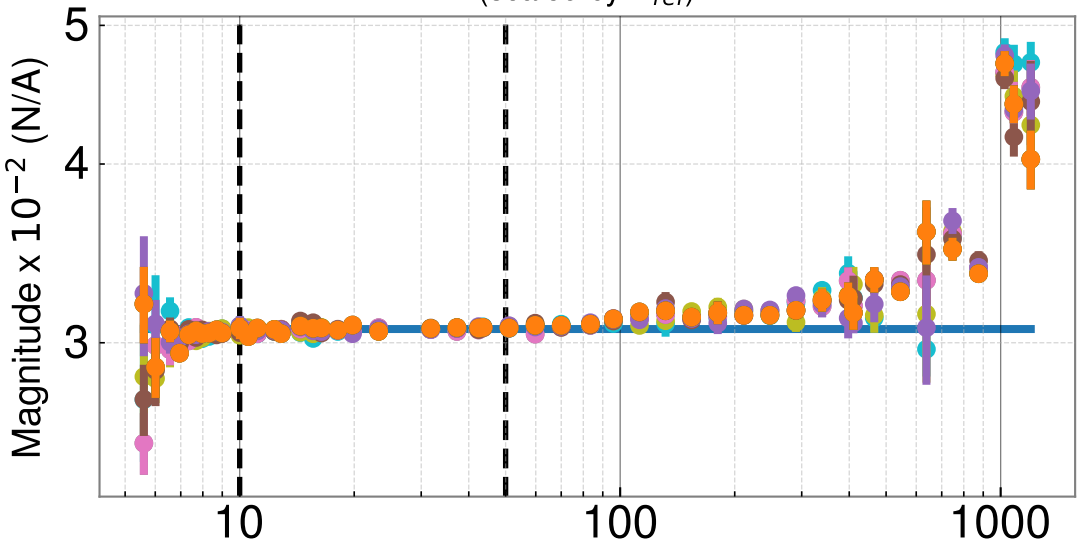


H1SUSEX L2 actuation model history

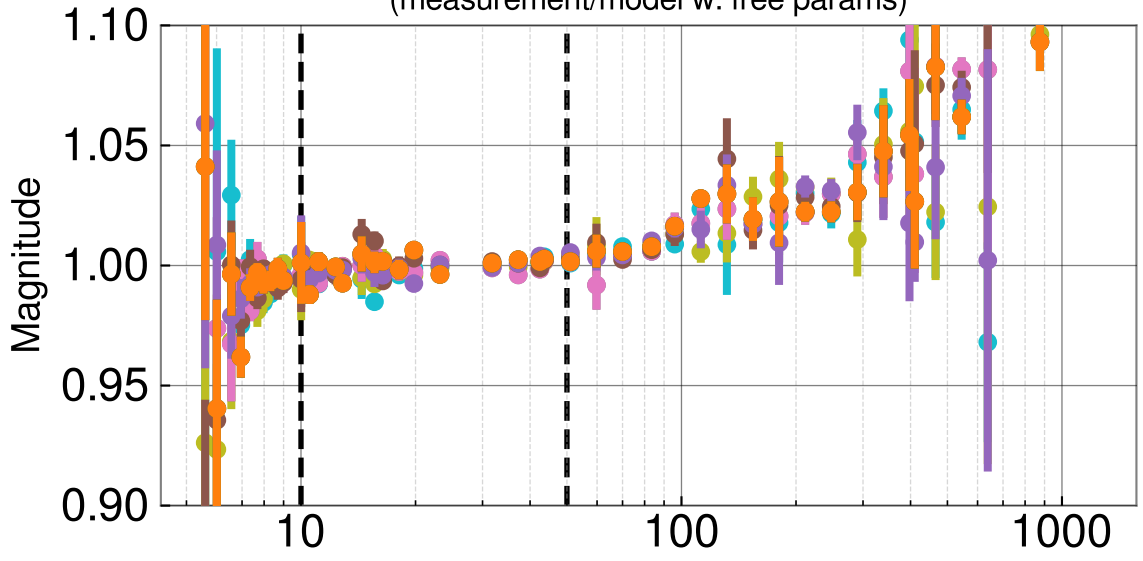
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230510T062635Z/pydarm_H1.ini

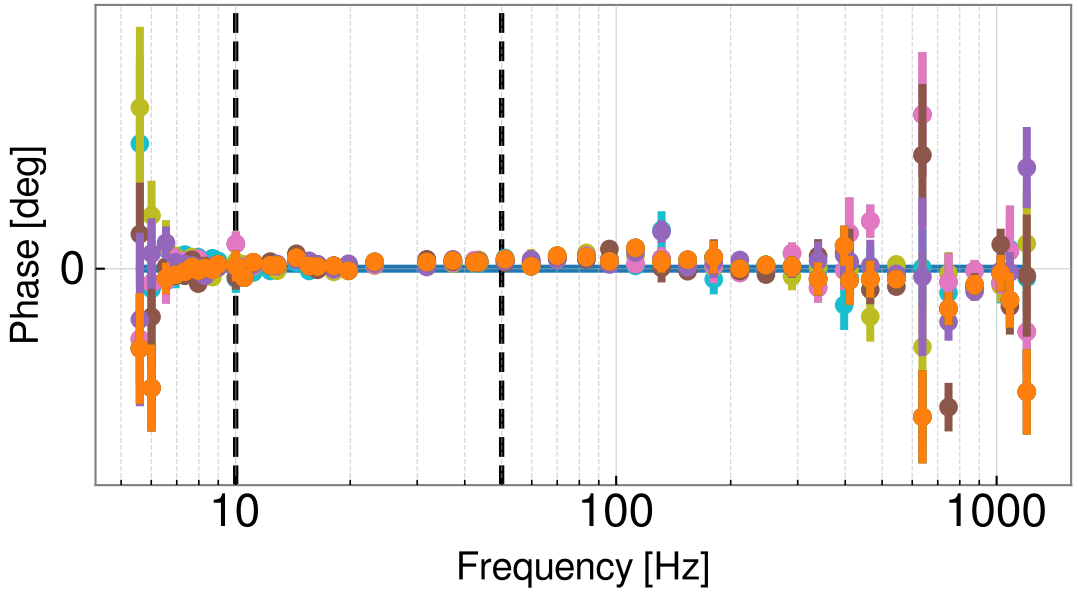
20230510T042516Z model
20230509T064300Z measurement
20230509T064300Z measurement
20230509T064300Z measurement
20230508T173520Z measurement
20230506T175709Z measurement
20230505T172117Z measurement
20230505T172117Z measurement
20230505T010115Z measurement
20230504T052558Z measurement
MCMC Fit Range: 10 Hz to 50 Hz

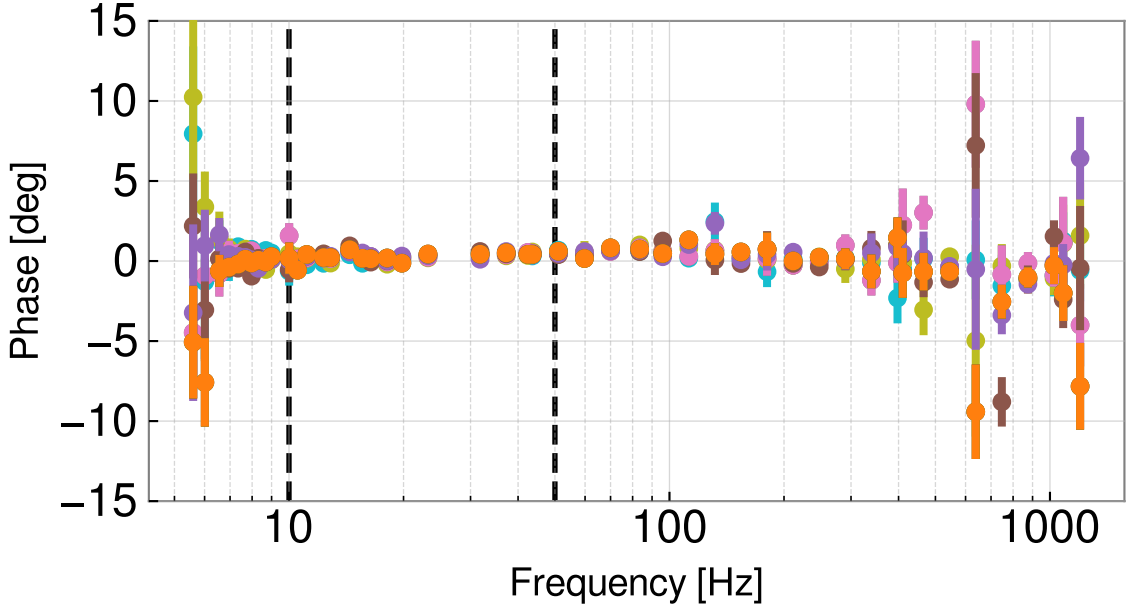
Actuation strength transfer functions
(scaled by H_{ref})



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

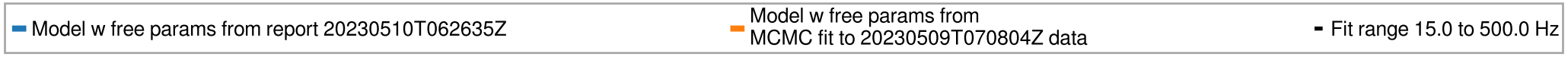


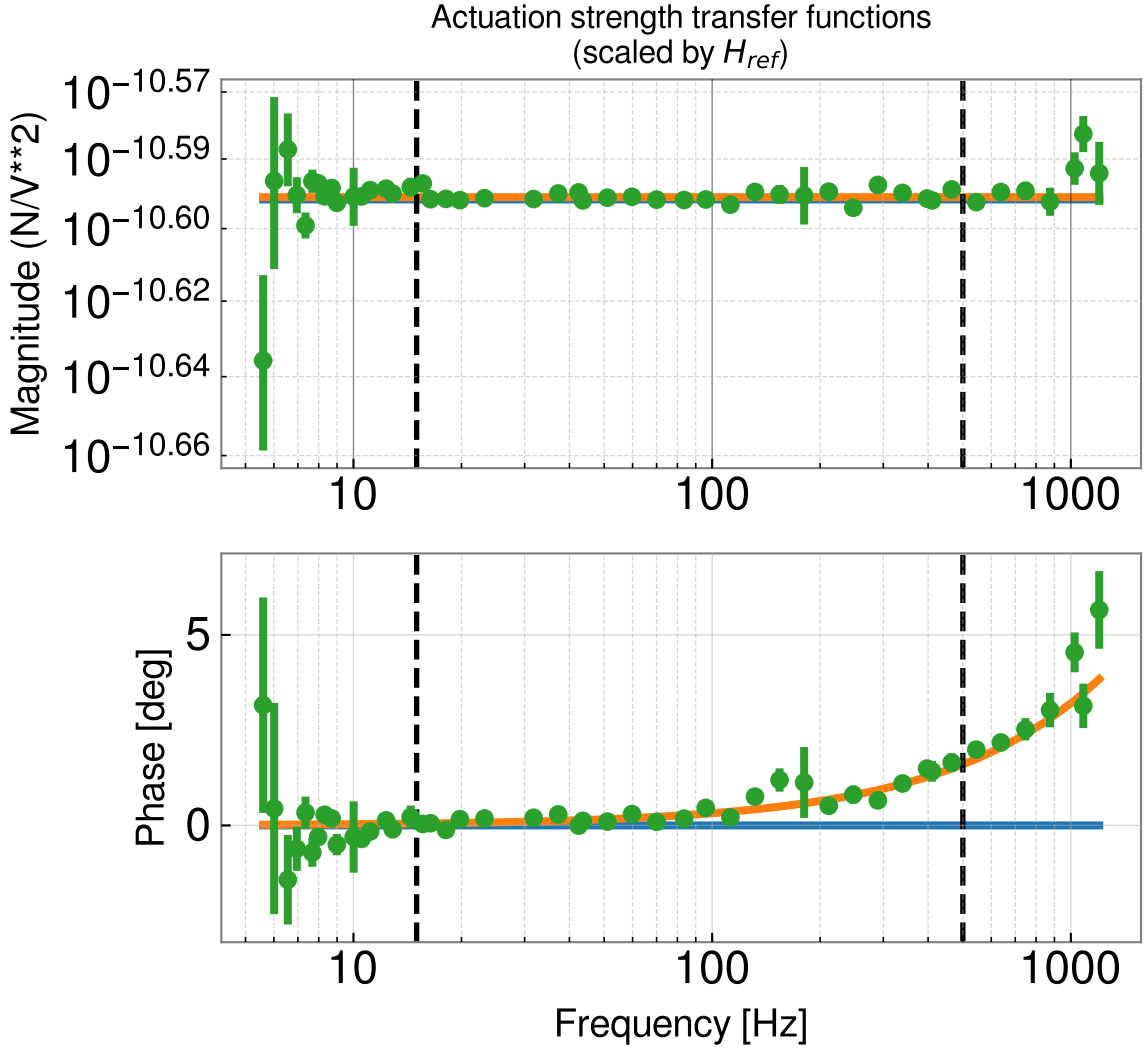


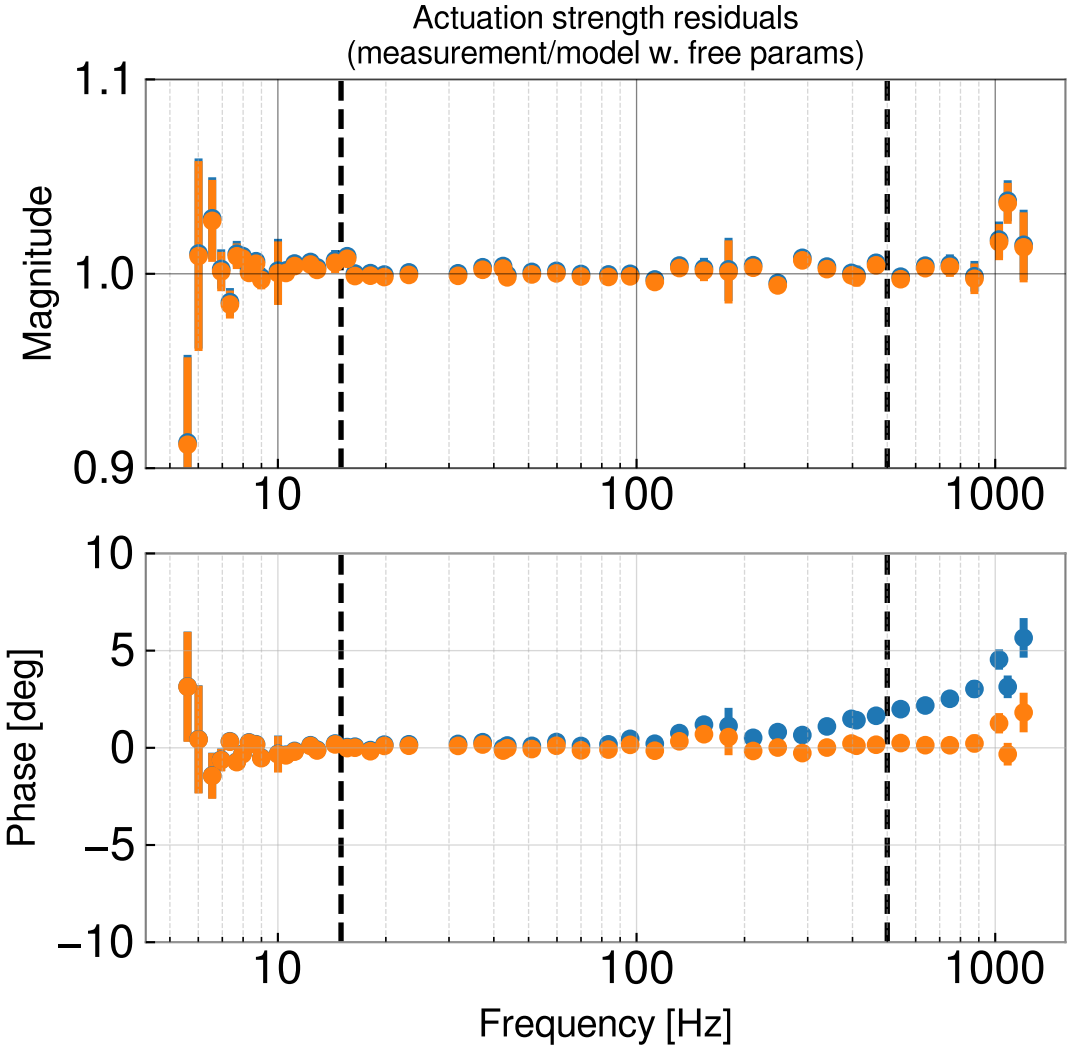


H1SUSEX L3 actuation model MCMC summary

All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230510T062635Z/pydarm_H1.ini

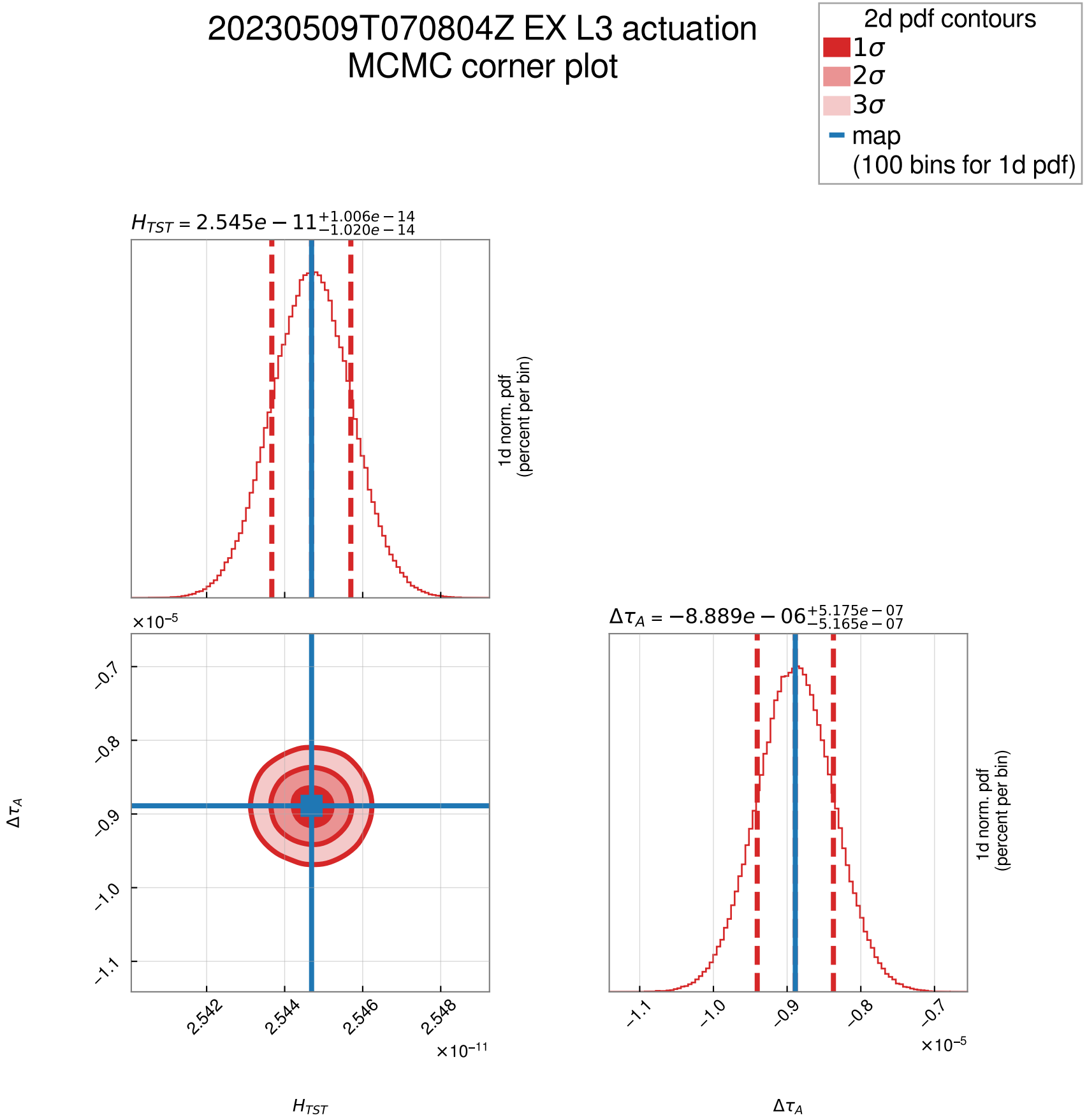






Parameter (value +/-)	value	+	-
Actuation Gain, Hat (N/V**2)	2.545e-11	1.006e-14 (0.04%)	1.02e-14 (0.04%)
Residual time delay, tau_A (s)	-8.889e-06	5.175e-07 (-5.82%)	5.165e-07 (-5.81%)

20230509T070804Z EX L3 actuation
MCMC corner plot

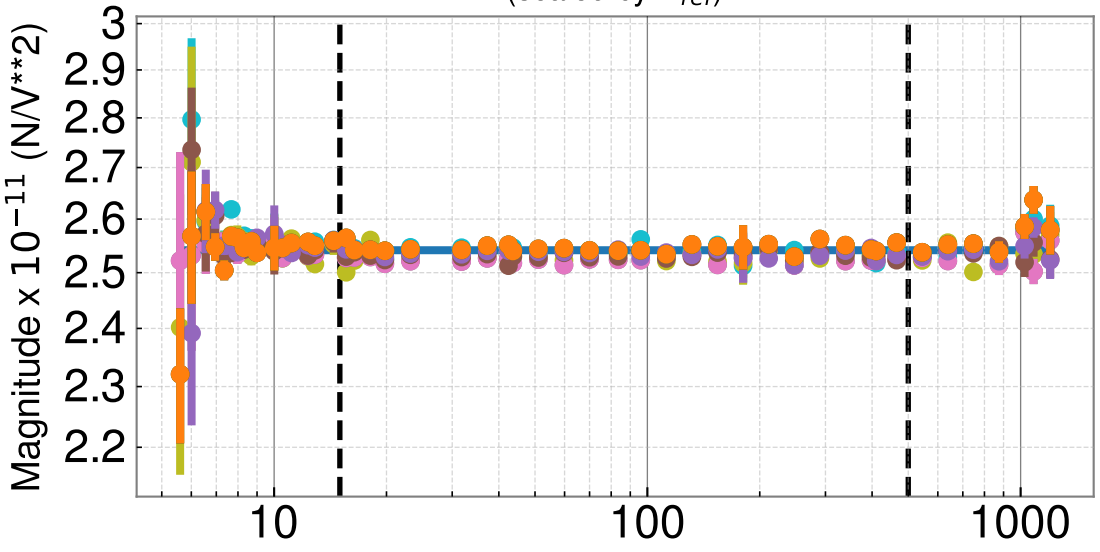


H1SUSEX L3 actuation model history

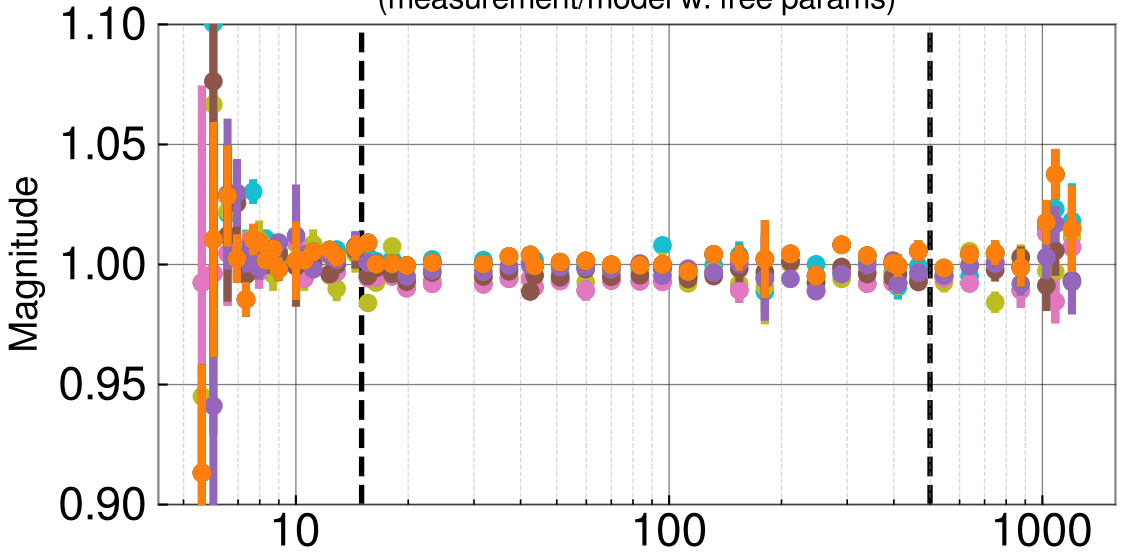
All fixed parameters drawn from /ligo/groups/cal/H1/reports/20230510T062635Z/pydarm_H1.ini

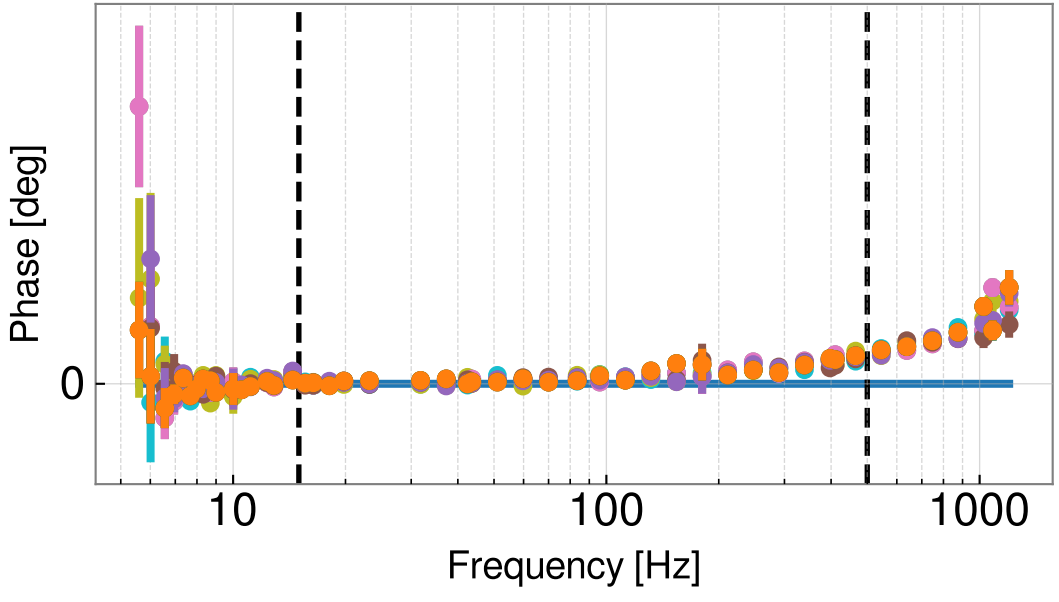
20230510T042516Z model
20230509T070804Z measurement
20230509T070804Z measurement
20230509T070804Z measurement
20230508T180024Z measurement
20230506T182213Z measurement
20230505T174621Z measurement
20230505T174621Z measurement
20230505T012619Z measurement
20230504T055102Z measurement
MCMC Fit Range: 15 Hz to 500 Hz

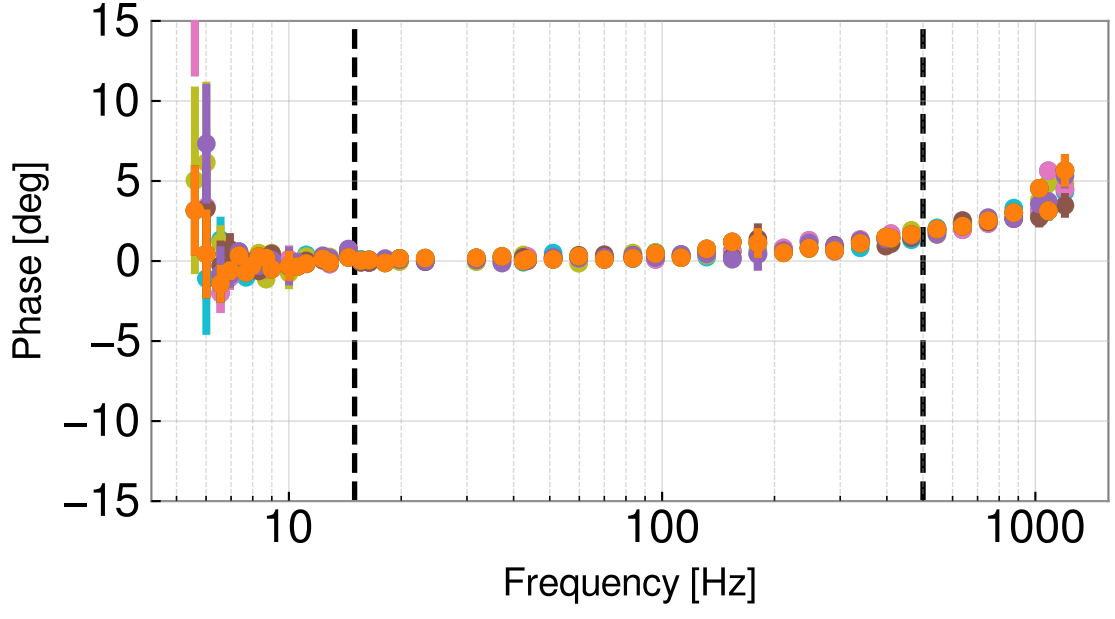
Actuation strength transfer functions
(scaled by H_{ref})

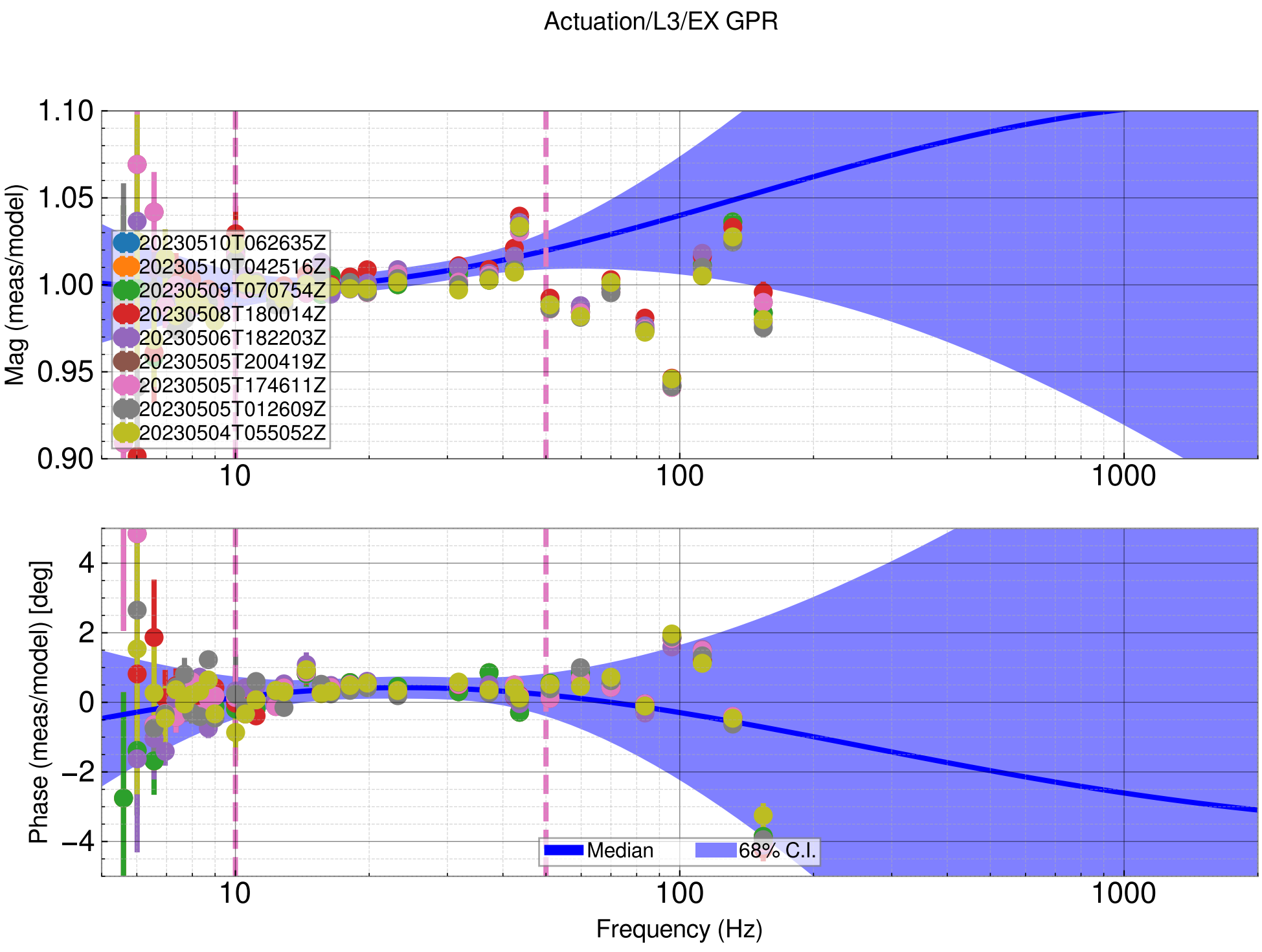


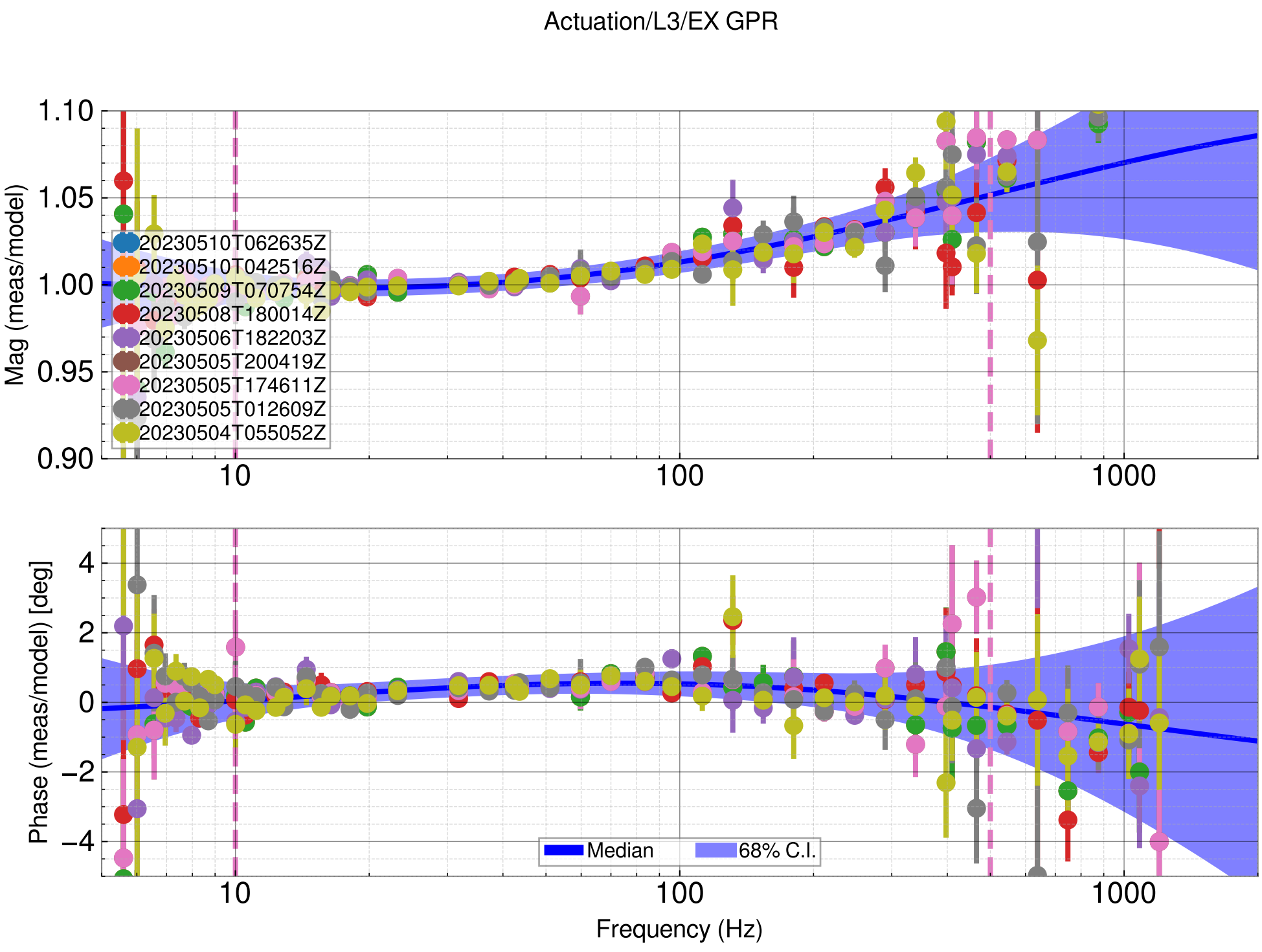
Actuation strength residuals
(measurement/model w. free params)

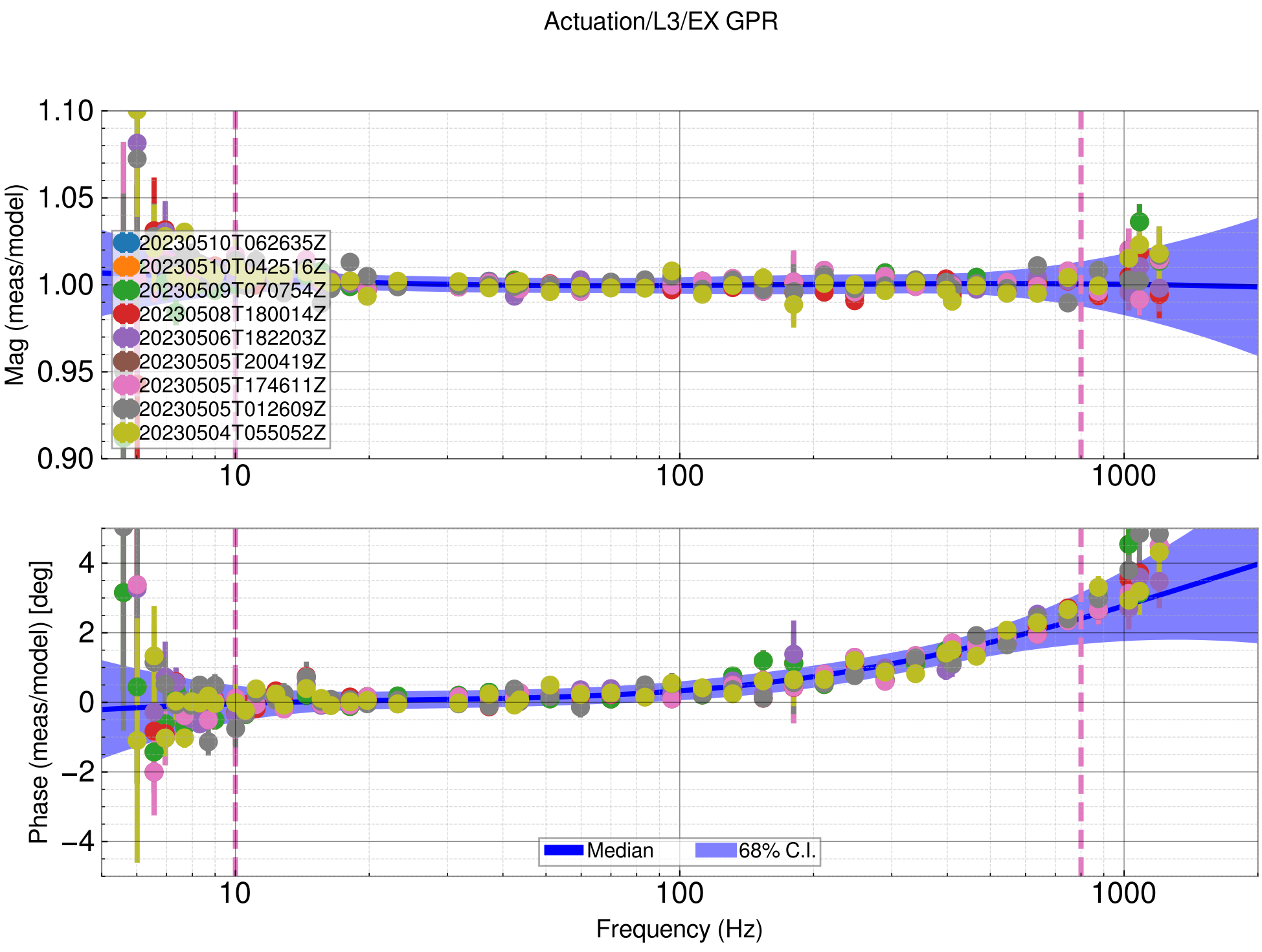







Actuation/L3/EX GPR
Mag (meas/model)
1.10
1.05
1.00
0.95
0.90
20230510T062635Z
20230510T042516Z
20230509T070754Z
20230508T180014Z
20230506T182203Z
20230505T200419Z
20230505T174611Z
20230505T012609Z
20230504T055052Z
10
100
1000
Phase (meas/model) [deg]
4
2
0
−2
−4
Median
68% C.I.
10
100
1000
Frequency (Hz)


Actuation/L3/EX GPR
Mag (meas/model)
1.10
1.05
1.00
0.95
0.90
20230510T062635Z
20230510T042516Z
20230509T070754Z
20230508T180014Z
20230506T182203Z
20230505T200419Z
20230505T174611Z
20230505T012609Z
20230504T055052Z
10
100
1000
Phase (meas/model) [deg]
4
2
0
−2
−4
Median
68% C.I.
10
100
1000
Frequency (Hz)


Actuation/L3/EX GPR
Mag (meas/model)
1.10
1.05
1.00
0.95
0.90
20230510T062635Z
20230510T042516Z
20230509T070754Z
20230508T180014Z
20230506T182203Z
20230505T200419Z
20230505T174611Z
20230505T012609Z
20230504T055052Z
10
100
1000
Phase (meas/model) [deg]
4
2
0
−2
−4
Median
68% C.I.
10
100
1000
Frequency (Hz)