Leak-optimized both-LQG-IC HPF; slow LQG noise=0.0, fast LQG noise=0.1, f_cutoff=3 $leak_slow=0.999$, $leak_fast=1.0$, r0 NCP = 0.6m residual (rad²/l 10³ 1.0 -atm_error_at_f_X -ncp_error_at_f_X 0.9 (rad) ncp_error_at_f_Y
noise_error_at_f_X
cost cutoff freq. 10¹ 0.8 error 10^{-1} 0.0 0.7 Closed-loop -0.510⁻³ This controller (1.4, 0.4) integrator -Reference ro -1.00.5 $10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2}$ 0.60.81.0 1.44.62.0 -0.54.0 6.0 0.5 0.0 NCP ro (m) Frequency (Hz) X = 0.949 radY = 1.104 rad10² 10² -Open-loop atm 10⁰ Open-loop NCP (rad²/Hz) 10³ -Open-loop noise 10⁻² 10⁻² Closed loop at X Closed loop at Y 10⁰ 10^{-4} 10^{-4} |phi_to_X|2 |Lfast_to_X|2 Power |phi_to_Y|2 |Lfast_to_Y|2 10^{-6} 10^{-6} 10⁻³ |Lslow_to_X|2 |Nfast_to_X|2 |Lslow_to_Y|2 |Nfast_to_Y|2 |Nslow_to_Y|2 10⁻⁸ 10⁻⁸ |Nslow_to_X|2 10^{-10} $10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2}$ $10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2}$ $10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2}$ Frequency (Hz) Frequency (Hz) Frequency (Hz) 0.9600 9.4898873×10^{-1} 0.956 9.4898872×10^{-1} 0.9575 0.954 9.4898872×10^{-1} 0.9550 9.4898872×10^{-1} \times 0.952 0.9525 9.4898871×10^{-1} 0.950 0.9500 9.4898870×10^{-1} $-1.5 \quad -1.0 \quad -0.5 \quad 0.0$ -8.5 $-8.0 \quad -7.5 \quad -7.0$ 25 40 35 30 log_slownoise log_fastnoise f_cutoff 0.9495 9.49060×10^{-1} 0.9494 9.49040×10^{-1} 0.9493 9.49020×10^{-1} 0.9492 \times 9.49000×10^{-1} 0.9491 9.48980×10^{-1} 0.9490 9.999**90099999**5**99999**5**99999**5**0** 0.99**4**.99**5**.99**6**.99**7**.99**8**.99**9**.000 leak fast leak slow