Leak-optimized IC-HPF; gain_slow=1.87, gain_fast=0.58, f_cutoff=45.5 leak_slow=0.9, leak_fast=0.99999, r0 NCP = 0.6m 10³ Closed-loop residual (rad²/ 2.0 1.0 -atm_error_at_f_X -ncp_error_at_f_X This controller (1.4, 0.4) integrator 10¹ Reference ro ncp_error_at_f_Y X error (rad) 0.5 noise_error_at_f_X 1.5 -cost cutoff freq. 10⁻¹ 0.0 1.0 -0.510⁻³ -1.010⁻⁵ 0.5 $10^{-2} \ 10^{-1} \ 10^{0}$ 10¹ 0.6 0.8 1.0 1.**4**.62.0 4.0 6.0 -1.0-0.50.0 0.5 1.0 NCP ro (m) Frequency (Hz) Y = 1.422 radX = 1.129 rad10² 10² Open-loop atm 10⁰ 10⁰ Open-loop NCP Power (rad²/Hz) 10³ Open-loop noise 10⁻² 10⁻² Closed loop at X Closed loop at Y ETF 10⁻⁴ 10⁰ 10^{-4} |phi_to_Y|² |Lfast_to_Y|² |phi_to_X|² |Lfast_to_X|² 10^{-6} 10^{-6} 10⁻³ Lslow_to_Y|2 Lslow_to_X|2 10⁻⁸ 10⁻⁸ Nfast_to_X|2 Nfast_to_Y|2 Nslow to Y Nslow to XI 10⁻¹⁰ 10^{-10} 10⁻³ 10⁻² 10⁻¹ 10⁰ $10^{-2} \ 10^{-1} \ 10^{0}$ $10^{-3} \ 10^{-2} \ 10^{-1} \ 10^{0}$ 10¹ 10¹ 10¹ 10² 10² Frequency (Hz) Frequency (Hz) Frequency (Hz) 1.13 1.12970 1.12 1.12965 1.12 error X error 1.10 1.12960 1.11 1.12955 1.08 1.12950 1.10 1.06 1.12945 0.55 45 1.85 0.60 40 50 1.80 1.90 1.95 0.50 0.65 35 55 f_cutoff gain_slow gain_fast 1.129500×10^{0} 1.26 1.129480×10^{0} 1.23 error 1.20 1.129460×10^{0} 1.17 1.129440×10^{0} 1.14 9.999000 **9.99** 9.99900 **9.99** 9.999000 **9.99** 9.990000.50 0.00 0.75 0.25 1.00 leak_slow leak_fast