

## Lead & Lag Compensation

Need at least  $40^\circ$  phase lead, while satisfying

$$\sqrt{z_{\text{lead}} \cdot p_{\text{lead}}} \approx 2 \implies z_{\text{lead}} \cdot p_{\text{lead}} = 4$$

The choice of  $z_{\text{lead}} = 1$ ,  $p_{\text{lead}} = 4$  gave phase lead =  $37^\circ$ .

Need to space  $z_{\text{lead}}$  and  $p_{\text{lead}}$  farther apart:

$$\begin{cases} z_{\text{lead}} = 0.8 \\ p_{\text{lead}} = 5 \end{cases} \implies \text{phase lead} = 46^\circ$$

