Approximate PI via Lag Compensation

Tracking a constant reference: if the stability conditions

$$K > 1 - p, \quad Kz > p$$

are satisfied, then the steady-state error is

$$e(\infty) = \frac{1}{1 - \frac{Kz}{p}}$$

— this will be close to zero (and negative) if $\dfrac{Kz}{p}$ is large.

Lag compensation *does not* give perfect tracking (indeed, it does not change system type), but we can get as good a tracking as we want by playing with K, z, p. On the other hand, unlike PI, lag compensation gives a stable controller.