

ANTI-WINDUP FOR PI CONTROLLER

$$u(t) = K_P e(t) + K_I \int_0^t e(t) dt$$

$$\dot{u}(t = kT_P) \approx \frac{u(k) - u(k-1)}{T_P}$$

$$\dot{e}(t = kT_P) \approx \frac{e(k) - e(k-1)}{T_P}$$

$$u(k) = u(k-1) + K_P e(k) + T_P K_I e(k) - K_P e(k-1)$$

$$\Delta u(k) = u(k) - u(k-1)$$

$$\Delta u(k) = K_P e(k) + T_P K_I e(k) - K_P e(k-1)$$

