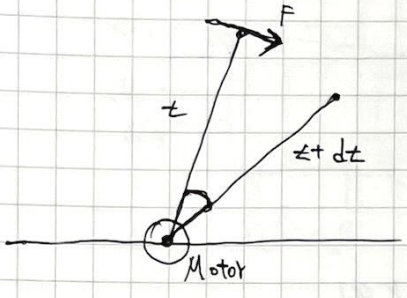
Title ~~Admittance Control~~ (Motor) Virtual Motor Date / Time 24/6/30 Page No.

~~const F → const v~~



$\theta_d - \theta_c$

PID (PD)

$$MV(t) = K_p e(t) + K_i \int_0^t e(t)\,dt + K_d \frac{de}{dt}$$

Voltage

$$= \cancel{IR + L\frac{dI}{dt} + k_e \cdot w}$$

$$= iR + L\frac{di}{dt} + k \cdot w$$

~~$V(t) = K_p$~~

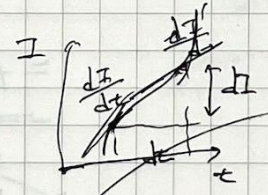
$$V = K_p(\theta_d - \theta_c) + K_d \frac{d}{dt}(\theta_d - \theta_c)$$

$$= L\frac{dI}{dt} + IR + kw$$

$$V - kw = L\frac{dI}{dt} + IR$$

$$(V - kw - IR)\,dt = L\,dI$$

$$i = i + (V - kw - iR)\,dt/L$$



$$v = L\frac{di}{dt} + iR + Kw$$

$$v - Kw = L\frac{di}{dt} + Ri$$

$$(v - kw - Ri) = L\frac{di}{dt}$$

$$\frac{v - kw - Ri}{L}\,dt = \cancel{K}\,di$$

$$Kw = \frac{v - L\frac{di}{dt} - iR}{k}$$

$$i' = \frac{v - L\frac{di}{dt} - kw}{R} - i$$

$$\frac{i'}{dt} = \frac{di}{dt}$$

$$w = \frac{1}{k}\left(v - L\frac{di}{dt} - Ri\right)$$