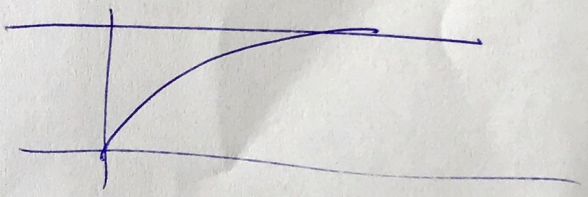
$$\dot{r} = L\left[\dot{p} - \left(S^T(q,\dot{q}) + r\right)\right]$$

$$\dot{r} = L\left(u - r\right)$$

$r(0)$

$$r(t) = r(0)\exp(-Lt)$$



$$p_\theta = B_m \dot{\theta}$$

$$\tilde{x} = L_\theta\left[-p_\theta + \int(\tau - \tilde{x})\,dt\right]$$

$$\dot{\tilde{x}} = L_\theta\left[-\dot{p}_\theta + \tau - \hat{x}\right]$$

$$u = K_p \tilde{x} = L_\theta\left[B_m\ddot{\theta} + \tau - \hat{x}\right]$$

$$L_\theta\left[+\tau_J - \hat{x}\right]$$