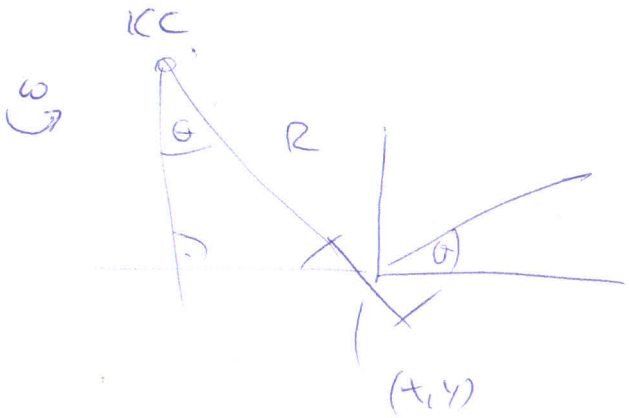

$$ICC_x = x - R \cdot \sin\theta$$
$$ICC_y = y + R \cdot \cos\theta$$

$$V_R = \omega \cdot (R + l/2)$$
$$V_L = \omega \cdot (R - l/2)$$

$$\Rightarrow \frac{V_R}{(R + l/2)} = \frac{V_L}{(R - l/2)}$$

$$V_R R - l/2\, V_R = V_L R + l/2\, V_L$$

$$R(V_R - V_L) = l/2\,(V_R + V_L)$$

$$\Rightarrow R = \frac{l}{2}\,\frac{(V_R + V_L)}{(V_R - V_L)}$$

$$V_R - V_L = \omega R + l/2\,\omega - \omega R + \omega\, l/2$$
$$= \omega l$$
$$\Rightarrow \omega = \frac{V_R - V_L}{l}$$

$$V = \omega \cdot R = \frac{V_R - V_L}{l} \cdot R = \frac{V_R - V_L}{l}\,\frac{l}{2}\,\frac{(V_R + V_L)}{V_R - V_L}$$
$$= \frac{1}{2}(V_R + V_L)$$

Robotics II 21.11.11

Odometry Model

Drill Stack