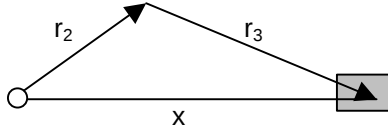


Accelerations

Perform position and velocity analysis

Find position and velocity unknowns



$$\vec{r}_2 + \vec{r}_3 = \vec{x}$$

$$r_2 e^{iq_2} + r_3 e^{iq_3} = x e^{i0}$$

velocity

$$i\dot{q}_2 r_2 e^{iq_2} + i\dot{q}_3 r_3 e^{iq_3} = \dot{x}$$

acceleration

$$i\ddot{q}_2 r_2 e^{iq_2} - \dot{q}_2^2 r_2 e^{iq_2} + i\ddot{q}_3 r_3 e^{iq_3} - \dot{q}_3^2 r_3 e^{iq_3} = \ddot{x}$$

Real Part of Acceleration Equation

$$-\ddot{q}_2 r_2 \sin(q_2) - \dot{q}_2^2 r_2 \cos(q_2) - \ddot{q}_3 r_3 \sin(q_3) - \dot{q}_3^2 r_3 \cos(q_3) = \ddot{x}$$

Imaginary Part of Acceleration Equation

$$\ddot{q}_2 r_2 \cos(q_2) - \dot{q}_2^2 r_2 \sin(q_2) + \ddot{q}_3 r_3 \cos(q_3) - \dot{q}_3^2 r_3 \sin(q_3) = 0$$

