

1 Direct Dynamics

Newton-Euler Equations of Motion

Problem 3

Two uniform hinged rods 1 and 2 of mass $m_1 = m_2 = m$ and length $AB = BC = L$ are shown in Fig. 1.6. The rod 1 is connected to the ground by a pin joint at A and to the rod 2 by a pin joint at B . The end B is moving with friction along the horizontal surface. The coefficient of friction between rod 2 and the horizontal surface is μ . The acceleration due to gravity is g . Find the equation of motion of the system. Numerical application: $m = 1$ kg, $L = 1$ m, $\mu = 0.1$, and $g = 10$ m/s².

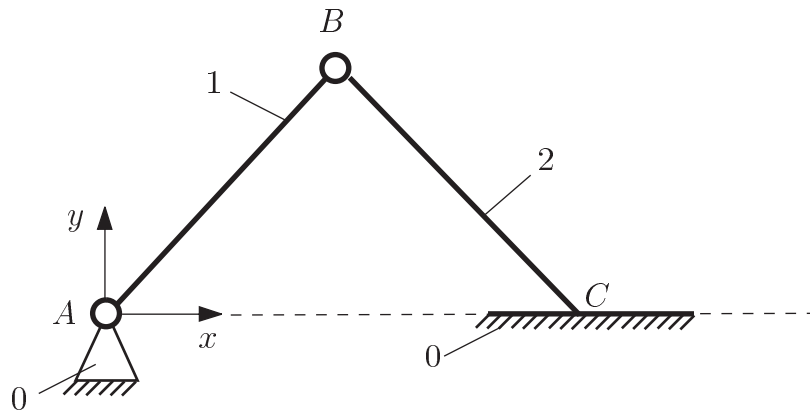


Figure 6