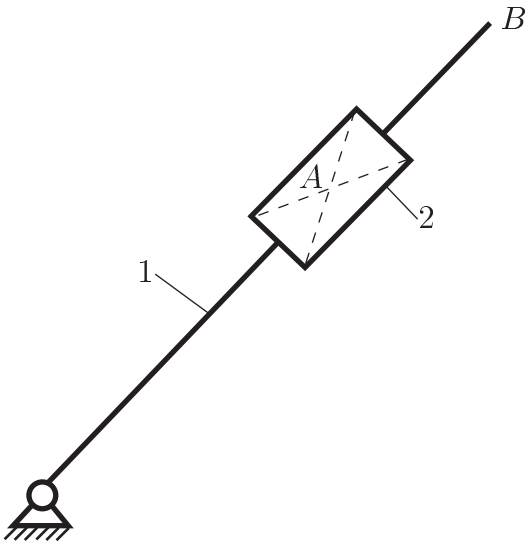
Homework - RT kinematic chain

Outside the long slender link 1, of mass m_1, a translational joint 2, of mass m_2, is sliding without friction (see the figure). The length of the link is L. The mass moment of inertia of the slider 2 with respect to its mass center point A is $I_A \approx 0$. The acceleration due to gravity is g. To simplify the calculation assume $m_1 = m_2 = m$.

1. Find the equations of motion for the RT kinematic chain using Newton-Euler method;

2. Solve the equations of motion using MATLAB. Select the initial conditions.

Numerical application: $m = 1$ kg, $L = 1$ m, $g = 10$ m/s^2.



Figure