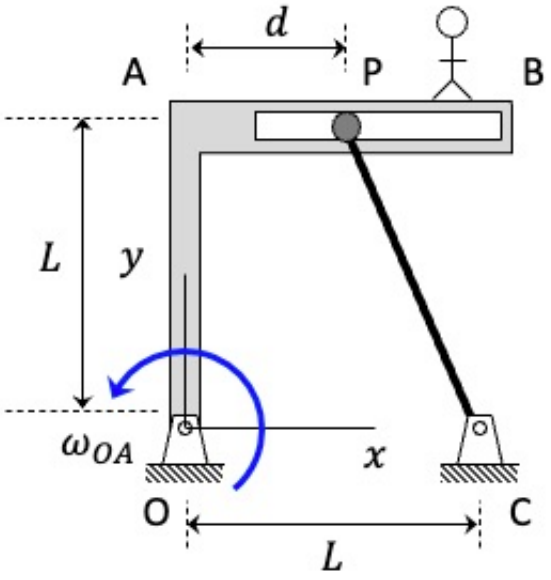
Homework 3.D

Given: A L-shaped bar OAB is pinned to ground at end O. A straight slot is cut into section AB of the bar, with particle P being constrained to move within the slot. An observer and a set of xyz-axes are attached to the bar. The perpendicular distance between P and section OA of the arm is d. Link CP connects P back to ground with a pin joint at end C. The bar OAB is rotating counter-clockwise with a constant speed of ω_{OA}.

Find: At the instant shown, the slot is parallel to line OC, and $d = L/2$. Using the 2D moving reference frame equations:

(a) Determine the angular velocity of link CP and the value for $\dot{d}$.

(b) Determine the angular acceleration of link CP and the value for $\ddot{d}$.



Your answers should be in terms of, at most: ω_{OA} and L.