Homework #5

Assigned on Friday, Feb 13; due on Friday, Feb 20

Find the collapse load P_u for the frame shown in **Figure 1** <u>using mechanism method</u>. Assume idealized elastic-perfectly plastic moment-curvature and axial force-deformation behavior for members. Neglect the axial loading effect in flexural members. Note that the tie member AD is connected to the frame at D through a pin connection.

Take Dia_{AD} = 12 mm, $Z_{BD} = Z_{CF}$ = 1000 cm^3, Z_{DF} = 900 cm^3, σ_y = 250 MPa, L_{AB} = 3.65 m, L_{DE} = 4.88 m, L_{EF} = 2.44 m and L_{BD} = 3.65 m.
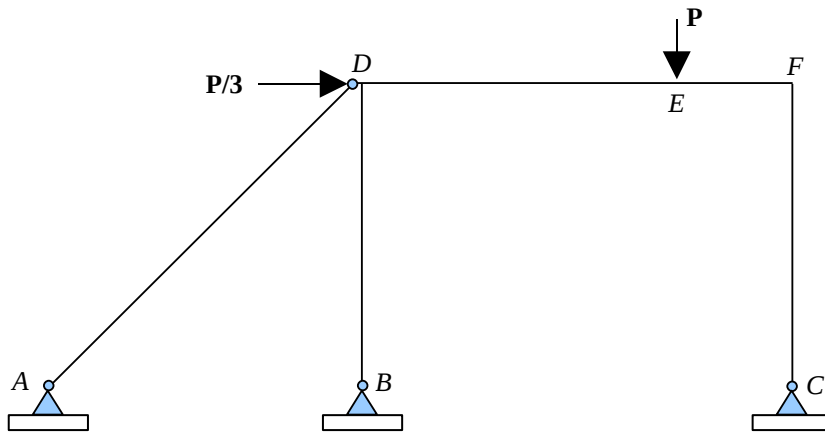

Figure 1. Loading on the portal frame (with a tie).