

4.19 † **Beam location** (if you are unable to do this, first try Homeworks 2.21, 4.15).

A uniform beam B is attached to a roof N by two cables (A and C).

Cable A attaches to the roof at point N_o of N and to the beam at point B_o of B .

Cable C attaches to the roof at point N_C of N and to the beam at point B_C of B .

N_o , B_o , B_{cm} , B_C , N_C are all in the same vertical plane.

Description	Symbol	Type	Value
Distance between N_o and N_C	L_N	Constant	6 m
Distance between B_o and B_C	L_B	Constant	4 m
Length of cable A	L_A	Constant	2.7 m
Length of cable C	L_C	Constant	3.7 m

Calculate the distance between N_o and B_{cm} when the beam is stationary in N .

Result (4 significant digits): distance \approx 4.0955 m

Instructor: See www.MotionGenesis.com \Rightarrow [Get Started](#) \Rightarrow [Statics](#)

Verify your intuition/analysis predicts vertical cables and a horizontal beam for the special case $L_B = L_N$ and $L_C = L_A$.

