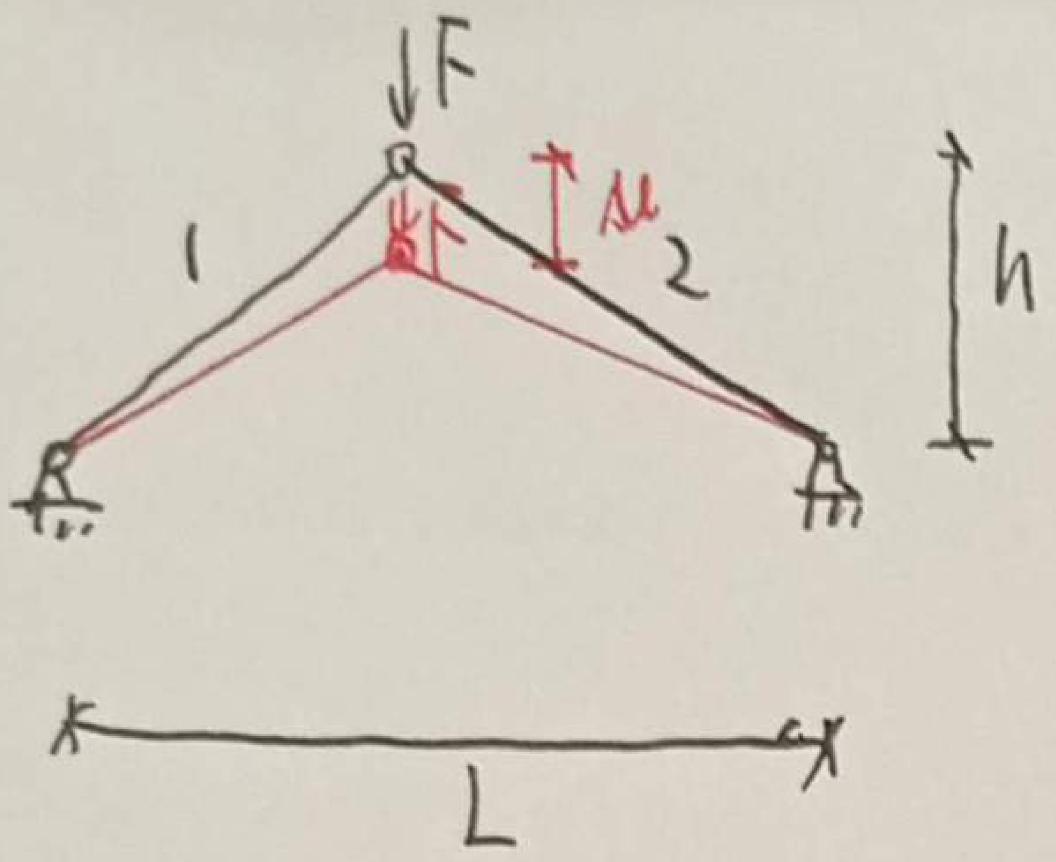


求证: $F = 2\frac{h-u}{l_1}\cdot\frac{l_0-l_1}{l_0}EA$.

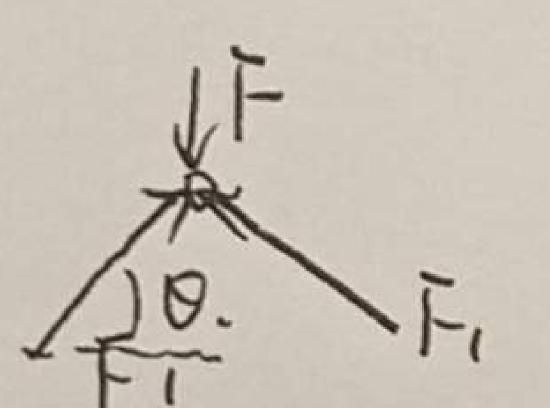
其中 $l_0=\sqrt{(\frac{L}{2})^2+h^2}$. $l_1=\sqrt{(\frac{L}{2})^2+(h-u)^2}$.

证: 由几何关系易知 l_0 即为初始杆件长度. l_1 为当顶点位移为 u 时杆件的长度。

由于两杆对称，取其中一根分析. 有: (记 F_1 为杆件1内力)

$\varepsilon = \frac{l_0-l_1}{l_0}$.　$\sigma = E\varepsilon$, $F_1 = \sigma A = EA\cdot\frac{l_0-l_1}{l_0}$, (压力)

对结点进行受力分析:



$\Sigma F_y = 0$, $-F + 2F_1\cdot\sin\theta = 0$.

$\Rightarrow F = 2F_1\sin\theta = 2F_1\cdot\frac{h-u}{l_1} = 2\cdot EA\cdot\frac{l_0-l_1}{l_0}\cdot\frac{h-u}{l_1}$. 得证!