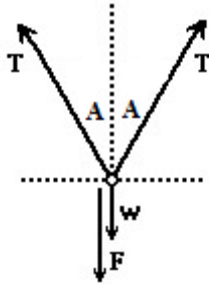


Answer on Question #57461-Physics-Mechanics-Relativity

If a person hangs from two strands of rope that form equal angles to the vertical, how could the tension in each rope possibly be more than the person's weight?

Answer



We can see that

$$\vec{F} = \vec{T}_1 + \vec{T}_2 + \vec{W}.$$

For the equilibrium we need $\vec{F} = 0$:

$$W = 2T \cos A.$$

When

$$\cos A < \frac{1}{2} \rightarrow A > 60^\circ$$

the tension in each rope possibly be more than the person's weight:

$$W < T.$$