

1. Michell Truss of order 4

- A) The structure is not potentially inconsistent, which means the system is stable.
- B) The structure is not underdetermined, which means it is not tensionable and the solution is unique.

2. Non minimal tensegrity prism with 4 bars

- A) This structure is potentially inconsistent. It means that the system has instability or soft modes. Instability means that small deformations of the structure can lead rapidly to failure. Soft modes are also generally undesirable in a tensegrity structure, as they easily lead to relatively large deflections in response to small disturbances.
- B) The structure is underdetermined with 3 DOF, which means there are 3 fewer independent equations than unknowns in static equilibrium. This situation generally admits a certain control authority over the force distribution in the members, which can be useful if leveraged correctly. When the angle of two squares is larger than 0 and smaller than $\pi/4$, no bars are under tension and strings are all under tension with $\tau_{\min}=0.1$, so the structure is pretensionable.

3. Non minimal tensegrity prism with 3 bars

- A) This structure is potentially inconsistent. It means that the system has instability or soft modes. Instability means that small deformations of the structure can lead rapidly to failure. Soft modes are also generally undesirable in a tensegrity structure, as they easily lead to relatively large deflections in response to small disturbances.
- B) The structure is underdetermined with 3 DOF, which means there are 3 fewer independent equations than unknowns in static equilibrium. This situation generally admits a certain control authority over the force distribution in the members, which can be useful if leveraged correctly. When the angle of two triangles is larger than $\pi/6$ and smaller than $\pi/2$, no bars are under tension and strings are all under tension with $\tau_{\min}=0.1$, so the structure is pretensionable.

PS: After many times of test, I find that height or length of the structure may not influence its pretensionability, but I think we need to use a more general and reliable way to prove it.