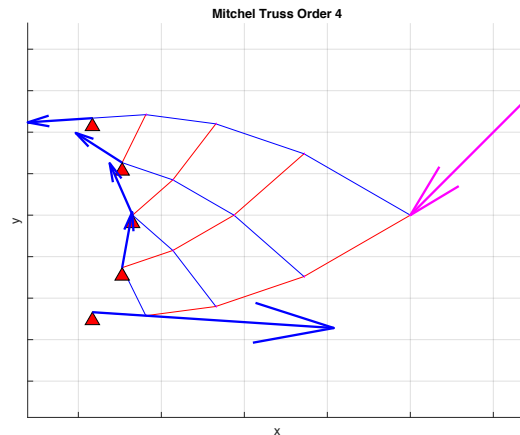


Assignment MAE 290A

Part I



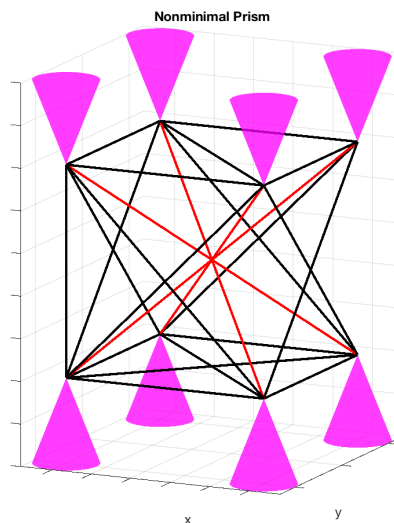
A) Is this structure potentially inconsistent? What does that mean?

This structure is not potentially inconsistent. This indicates that the matrix has rows which are linearly independent on the other rows. If the system were potentially inconsistent the structure with a realizable equilibrium for an arbitrary loading profile would be unstable(soft).

B) is this structure underdetermined? What does that mean? If it is underdetermined, is it pretensionable, or only tensionable under load? Discuss.

This structure is not underdetermined and therefore it is not tensionable. An underdetermined system is when there are fewer equations than unknowns. In comparison to a overdetermined system where there are more equations than unknowns. An underdetermined system would occur when the system is underconstrained and this is when we have more unknowns than there are equations.

Part II



A) Is this structure potentially inconsistent? What does that mean?

Yes, although I do not have the correct figure this tensegrity structure is potentially inconsistent, this indicates that there is the presence of soft modes indicating potential instability. We can adjust for this by applying more constraints such as fixed points to fix this problem.

B) Is this structure undetermined? What does that mean? If it is undetermined, is it pretensionable, or only tensionable under load? Discuss.

Yes, this structure is underdetermined with 9 DOF in this case of my plot. The system is also not pretensionable. An underdetermined system would occur when the system is underconstrained and this is when we have more unknowns than there are equations.