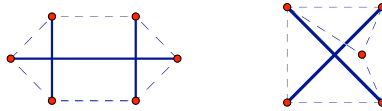


1. Extend Cauchy's theorem to the case when at most one edge is not convex, but all vertices are in convex position (i.e. all the vertices lie on the convex hull and there is a support plane for each vertex.)
2. Show that the regular octahedron and cube with cables for its edges and struts for its main diagonal connecting antipodal points is super stable.
3. Show that the following two tensegrities are super stable. The one on the left is symmetric about the horizontal and vertical lines.



4. On each face of the unit cube place four points symmetrically in a diamond shape as indicated in the Figure below. Place struts along the diagonals of the squares (as shown for some of the faces). The square diamond shapes have a strut connecting opposite vertices (shown as solid blue for the some of the faces), and solid brown struts for the larger faces that sit inside the cube. Place cables along the edges of all the squares, and place additional struts connecting antipodal vertices (not shown in the Figure).

Show that this tensegrity has a stress matrix that is positive semi-definite, but not of maximal rank, by showing that there is another non-congruent configuration that has the same member lengths as this configuration.

