

# **Large-scale tensegrity assembled from prismatic cells: Design method and mechanical properties**

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As a novel type of light-weight and reticulated structures, tensegrities have found many technologically important applications. In this paper, a facile method is developed to construct large-scale tensegrities from prismatic elementary cells. We tune the orientation of the structural axis of each cell by the affine transformation technique. Then the cells can be assembled easily in any directions required by the structural design. The method proposed here allows us to construct various types of large-scale tensegrity structures satisfying the demands of sizes and topology. A number of representative examples are provided, including straight and curved beams, plates, shells, and three-dimensional large-scale tensegrities. Their properties are evaluated from the viewpoints of self-equilibrium, stability, and mechanical responses.

**Keywords:** Tensegrity, Structural design, Assembly method, Prismatic cell, Mechanical property