

Large deformational analyses for cable/net structure with frictionless contact

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In this study, axial elements with sliding node are developed to simulate large deformational behavior of cable or net structure with frictionless contact. Even if many sliding nodes are inserted to an element, geometrical stiffness can be strict and explicit because of constant axis strain all over the element. Therefore, it is possible to achieve strict equilibrium solution with stable convergence process even in analyses of net structures with complex shape. Moreover, we can judge the generation of contact by passing over between elements, and also can judge the cancellation of contact by monitoring the sign of contact force. Some numerical examples are shown and discussed about above.

Keywords: axial elements with sliding node, frictionless contact, large deformational behavior, the generation of contact, the cancellation of contact

Numerical examples for net structure with frictionless contact

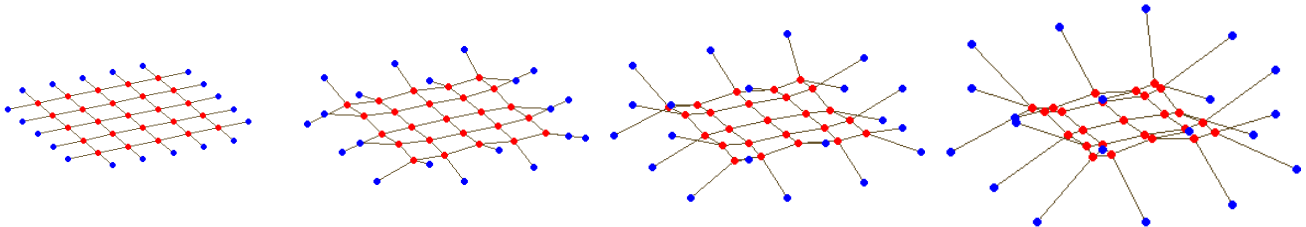


Fig1: Deformation of a net when the boundary nodes were displaced compulsory.

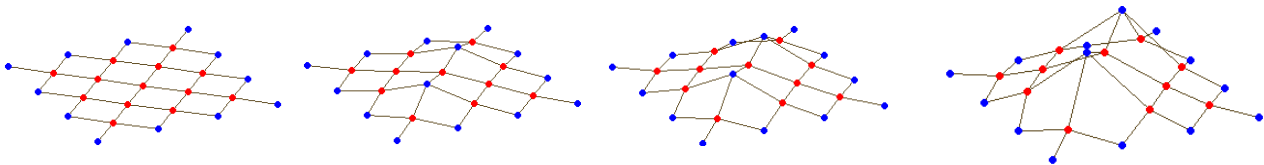


Fig2: Deformation of a net when the two nodes were hanged up.

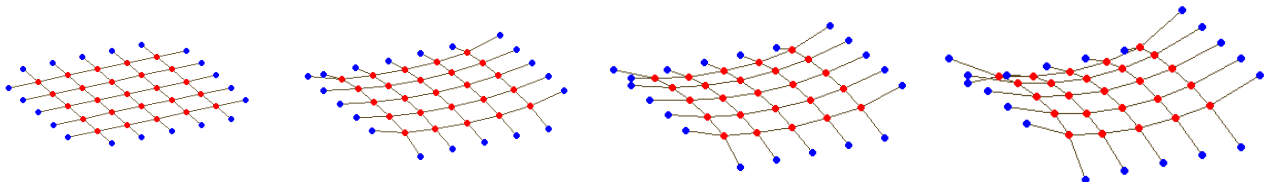


Fig3: Deformation of a net when the boundary nodes were displaced compulsory.