

عنوان مقاله:

Investigating the Effects of Joint Size and Members' Flexural Rigidity on Response of Flat Scissor-Type Structures in Deployed Configuration

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خلاصه مقاله:

Deployable scissor type structures are composed of beam elements, which are connected by hinges and allow them to be folded into a compact bundle for storage or transport. The whole idea of this type of structure is based on the so-called scissor-like elements (SLEs). These structures are deployed and demonstrate a huge volume expansion, and this process can be reserved. Scissor type structures are stress-free in both deployed and folded configuration, but stresses could increase when explored deployment and perform a nonlinear behavior. There are some parameters that can affect the response of deployable scissor type structures, the required force for deployment procedure and load bearing capacity of the deployed configuration. Some of these parameters are such as member length imperfection, members' cross section, the structural geometry, joints size, members' flexural rigidity, members' material and etc. In the present study the effects of joint size and members' flexural rigidity on response of flat scissor type structures are investigated by a finite element method.

کلمات کلیدی:

Deployable scissor type structure, Stress free, Nonlinear behavior, Joint size, Members' flexural rigidity

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