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EXECUTIVE SUMMARY

Deployable structure capable to transform its physical shape to designate form and their motion behaviour is measured as displacement. The Scissor Like Elements (SLEs) mechanism is the basic module applied to the structures to enable the structures transformation take place. The deployable structures kinematic behavior actually can be simulated by using displacement formulations based on their architectural profiles at preliminary design stage. However, the available formulations based on the fundamental of kinematic, dynamic, geometric principle and etc are not applicable to be used in some specific condition to represent the motion behavior of deployable structure develop. Thus, there is a need to derive new displacement formulations to be used in the specific condition such as Half-Scissor Like Elements (H-SLEs) mechanism deployable structure. This research aims to formulate the H-SLEs mechanism deployable structure models with analytical analysis and examine the proposed deployable model for validation. The displacement formulations derived will simulate the motion behaviors of the structures from folded configuration, deployment stage and final vertical deployed configuration. The experiment study will be carried out to validate the calculation results. Based on the research outcome, the displacement analysis formulations will contribute to the designer to simulate the structure motion behavior at their preliminary design stage in term to produce stiff and stable H-SLEs mechanism deployable structure. Finally, it will provide useful information in develop scissor based deployable structure.