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# Nonlinear Forced Vibration Analysis of Rectangular Plate Using Super Elements

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Implementation of finite element methods in the analysis of engineering structures has been widely used in the recent years. In the case of large structures due to the application of a large number of elements and nodes, the method become unattractive. Design of new techniques and elements have been one of the important issues among the finite element engineers. In this regard, dynamic behavior of geometric nonlinear plates under external harmonic force, using super elements analysis is considered. A one-quarter model of the plate is proposed to reduce the runtime. Von Karman strain-displacement relations is used. The findings indicate using a few super elements, the same results can be obtained by a large number of regular elements. The computational model is a simple and efficient way to predict the dynamic behavior of the plate. The time required of dynamic analysis is significantly smaller than the regular finite element.

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