ASPECTS OF THE BOUNDARY ELEMENT FORMULATION OF ISOTROPIC SHALLOW SHELLS USING RADIAL INTEGRATION METHOD

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This work presents a dynamic formulation of the boundary element method (BEM) for the analysis of isotropic shallow shells. An alternative approach to the these previous formulations is the coupling of plate bending and plane elasticity formulations, as proposed by Zhang and Atluri [1] who derived a formulation for static and dynamic analysis of isotropic classical shallow shells. In this case, domain integrals were computed by the domain discretization into cells. The formulation developed in this work is based on the coupling of plane elasticity formulation (membrane formulation) and thin plate formulation (Kirchhoff plates or classical theory of plates), but curvature effects are considered as body forces, generating domain integrals, that come from body forces are transformed into boundary integrals using the radial integration method (RIM). This method can be analysed in [2]. In the RIM, two radial basis functions are used as approximation functions and only the boundary is discretized in the formulation. Details of this formulation, the performance of the radial integration method considering accuracy and computational cost are being investigated.

REFERENCES

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