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Finite deflection of plates. (English) Zbl 0547.73064

Top. Boundary Elem. Res. 1, 204-224 (1984).

Previous works are discussed [e.g. the authors, *Int. J. Nonlinear Mech.* 17, 187-194 (1982; [Zbl 0491.73092](#)) and *C. A. Brebbia* (ed.), *Progress in boundary element methods. Vol. I* (1981; [Zbl 0475.73083](#))] and the general equations for finite deflection of thin elastic, flat plates based on the Kirchoff-Love theory are presented. The paper also shows an integral equation formulation of the von Kármán-type-nonlinear governing equations and a short derivation of the approximate governing equation due to Berger and its corresponding integral form. Some results illustrate the application of the approximate integral formulation for the Berger equation. Finally, the extension of the BEM to nonlinear bending problems with thin shallow shells and sandwich plates and shells is dealt with. Some representative numerical results are included.

MSC:

74S30 Other numerical methods in solid mechanics (MSC2010)

74S99 Numerical and other methods in solid mechanics

74K20 Plates

74K15 Membranes

Cited in 1 Document

Keywords:

general equations for finite deflection; thin elastic, flat plates; Kirchoff-Love theory; integral equation formulation; von Kármán-type- nonlinear governing equations; approximate governing equation due to Berger; nonlinear bending problems; thin shallow shells; sandwich plates