

MODELS OF CUSPED PLATES AND BARS

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Variational hierarchical one- and two-dimensional models are constructed for cusped elastic bars and plates, respectively. With the help of the variational methods the existence and uniqueness theorems for the corresponding one- and two-dimensional boundary value problems are proved in the appropriate weighted functional spaces. By means of the solutions of these one- and two-dimensional boundary value problems the sequence of the approximate solutions in the corresponding three-dimensional region is constructed. It is established that this sequence converges (in the sense of the Sobolev space H^1) to the solution of the original three-dimensional boundary value problem as the number of approximation tends to infinity. The systems of differential equations corresponding to the one- and two-dimensional variational hierarchical models are written down explicitly for a general orthogonal system and for the Legendre polynomials.

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R E F E R E N C E S

- [1] Vekua I.N., Shell Theory: General Methods of Construction. Pitman Advanced Publishing Program, Boston-London-Melbourne, 1985.