Harmonic vibration of a cusped plate in the N-th approximation of Vekua's hierarchical models

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In this paper elastic cusped symmetric prismatic shells (i.e., plates of variable thickness with cusped edges) in the N-th approximation of I.Vekuas hierarchical models (see, e.g., [1-3]) are considered. The well-posedness of the boundary value problems (BVPs) under the reasonable boundary conditions at the cusped edge and given displacements at the non-cusped edge is studied in the case of harmonic vibration. The classical and weak setting of the BVPs in the case of the N -th approximation of hierarchical models is considered. Appropriate weighted functional spaces are introduced. Uniqueness and existence results for the variational problem are proved. The structure of the constructed weighted space is described and its connection with weighted Sobolev spaces is established.

ლიტერატურა

[1] I.N. Vekua, *Shell Theory: General Methods of Construction*, Pitman Advanced Publishing Program, Boston-London-Melbourne, 1985.
[2] G. Jaiani, *Cusped shell-like structures,* SpringerBriefs in Applied Science and Technology, Springer-Heidelb erg-Dordrecht-London-New York, 2011
[3] N. Chinchaladze, R. P. Gilbert, *Harmonic vibration of prismatic shells in zero approximation of Vekua's hierarchical models*, Applicable Analysis: An International Journal, Doi:10.1080/00036811.2012.731502, i-first 2012