Prismatic Shell with the thickness vanishing at infinity in the N=0 approximation of hierarchical models

Natia Mchedlidze

The work is devoted to the prismatic shell with the thickness vanishing at infinity in the N=0 approximation of hierarchical models. The thickness of the plate is given by the expression as follows

$$2h = 2h_0 e^{-\kappa(x_1+x_2)}, \quad h_0 = const > 0, \quad \kappa = const \geq 0, \quad x_1 \geq 0, \quad x_2 \geq 0.$$

The following cases are considered:

I. Projection of the plate on Ox_1x_2 is given by the following expression

$$\omega_l = \{(x_1, x_2) : 0 \leq x_1 \leq l; \quad 0 \leq x_2 \leq l\}.$$

The existents and uniqueness theorems are proved in Hilbert Space $X^\kappa(\omega_l) \equiv W_2^1(\omega_l)$.

II. Projection of the plate on Ox_1x_2 is as follows

$$\omega := \{(x_1, x_2) : 0 \leq x_1 < +\infty; \quad 0 \leq x_2 < +\infty\}.$$

The solutions of the setting problems are given in integral forms, in some concrete cases it is given in explicit form.