CORRECTIONS TO THE PAPER OF V. M. KORNEV, "ON THE FORMULATION OF BOUNDARY CONDITIONS OF THE SIMPLIFIED EQUATIONS OF SHELLS OF REVOLUTION", PMM Vol. 34, №1, 1970

PMM Vol. 37, №2, 1973, p. 384

An erroneous Example 1 has been constructed in the paper metioned. In principle, the error is that in some cases the degenerate problem drops into the spectrum (this contradicts the conditions of the Theorem 1 proved). A correct modification of the example is presenred below.

Example 1. A fourth order differential equation with a small parameter at the highest derivative

$$\varepsilon^2 u^{(4)} - u'' + u = 0 \quad (0 \leqslant x \leqslant 1)$$

is considered under the boundary conditions containing the small parameters

$$u + u'' = 2, \; u' - \varepsilon^k u''' = 1 \quad (x = 0, \; 1)$$

For $k \leqslant 0$ and $k \geqslant 2$ the conditions of the theorem are satisfied: the complete and degenerate problems have a solution, and withal unique. Consequently, the boundary conditions for the degenerate equation

$$u_0'' - u_0 = 0 \quad (0 \leqslant x \leqslant 1)$$

have the form

$$u_0 + u_0'' = 2, \; k \leqslant 0; \quad u_0' = 1, \; k \geqslant 2 \quad (x = 0,1)$$

depending on the value of the parameter k. For $k \leqslant 0$ the boundary conditions simplify thus: $u_0 = 1 \; (x = 0,1)$. Let us note that Theorem 7 from [4] (supplement III) can be used for $k = 0$ and the formulated Theorem 1 is applied for $k \neq 0$. For $k = 1$ additional investigation of the problem is necessary since the boundary conditions of the initial problem cannot be written in canonical form.

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