ON ASYMPTOTIC ESTIMATES IN THE THEORY OF THIN PLATES

(PO POVODU ASIMPTOTICHESKIKH OTSENOK V TEORII TONKIKH PLASTIN)

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I.I.VOROVICH and R.L.SALGANIK
(Rostov-on-Don, Moscow)

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Having examined: (1) the paper [1] in which an estimate proportional to the logarithm of the relative thickness is obtained for the error in the displacements far from the edges of a thin plate, and considerations are presented on the unimprovability of this estimate, and (2) the criticism [2] of the paper [1], the authors of the present note have arrived at the following conclusions.

1. The estimate itself which contains the logarithmic factor is true.

2. Its unimprovability, presented by an example in [1], has not been proved. In this example, the equivalent body forces whose effect is replaced by assignment of the displacements on the boundary, are assumed proportional to the corresponding components of the Green's tensor in a narrow domain surrounding the boundary, where these forces are not zero. This may be feasible, but the requisite (logarithmic) growth in the error is then obtained as a result of the logarithmic increase in the boundary functions which occurs as the size of the plate increases.

Therefore, the results of [1] may not be a basis for refuting the power estimates obtained in constructing the solutions in the form of asymptotic power series in the small relative thickness.

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