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A Mathematical Model of Bars with Variable Rectangular Cross-section

Generalizing an idea of I. Vekua, fields of displacements, strains, and stresses of three-dimensional theory of linear elasticity have been expanded into orthogonal double Fourier-series by Legendre polinomials with respect to the variables along thickness, and width of bar, and then first (M+1)(N+1), M, N=0,1, .. ., terms have been left. The question of wellposedness of initial and boundary value problems in this approximation have been investigated. The cases when the variable cross-section turns into segments of straight line, and points have been also considered. Such bars will be called cusped bars.

Reference: G. V. Jaiani, Elastic Bodies with Non-smooth Boundaries-Cusped Plates and Shells, ZAMM,76, Suppl.2 (1996),117-120.