On One New Solving Approach of the Plane Mixed Problem for an Elastic Semistrip

Authors : Natalia D. Vaysfel'd, Zinaida Y. Zhuravlova

Abstract : The loaded plane elastic semistrip, the lateral boundaries of which are fixed, is considered. The integral transformations are applied directly to Lame's equations. It leads to one dimensional boundary value problem in the transformations' domain which is formulated as a vector one. With the help of the matrix differential calculation's apparatus and apparatus of Green matrix function the exact solution of a vector problem is constructed. After the satisfying the boundary condition at the semi strip's edge the problem is reduced to the solving of the integral singular equation with regard of the unknown stress at the semis trip's edge. The equation is solved with the orthogonal polynomials method that takes into consideration the real singularities of the solution at the ends of integration interval. The normal stress at the edge of the semis trip were calculated and analyzed.

Keywords : semi strip, Green's Matrix, fourier transformation, orthogonal polynomials method
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