The authors consider the contact problem of a tilted rigid shallow wedge indenter pressed upon the surface of an elastic half-plane. They write the equilibrium equations and use Airy’s function to end with the system \( \nabla^4 \Phi = 0 \), \( \nabla^2 \Psi - l^2 \nabla^4 \Psi = 0 \). They apply Fourier transform and compute the solution of the derived pair of fourth-order differential equations. They finally draw computations with the inverse Fourier transform which end with singular integrals. The main part of the paper presents a numerical scheme based on the collocation method and the Gauss-Chebyshev quadrature. In the last part of their paper, the authors present the results of their numerical computations. They especially analyze the dependence of the solution with respect to different parameters of the problem.

Reviewer: Alain Brillard (Riedisheim)

MSC:
74M15 Contact in solid mechanics
74B99 Elastic materials
74S99 Numerical and other methods in solid mechanics

Keywords:
contact problem; wedge indenter; Airy function; Fourier transform; collocation method; Gauss-Chebychev quadrature

Full Text: DOI

References:


[45] Gourgiotis, P. A.; Georgiadis, H. G., An approach based on distributed dislocations and disclinations for crack problems in...


This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.