# On construction of full-strength contour for axial symmetric problem of plane elasticity theory

Nana ODISHELIDZE. Nugzar CHANKVETADZE:

Affiliation: Iv. Javakhishvili Tbilisi State University, Faculty of Exact and Natural Sciences, Interdisciplinary (Mathematics, Computer Science) Department, Tbilisi, Georgia

email: nana_georgiana@yahoo.com
Iv. Javakhishvili Tbilisi State University, Faculty of Exact and Natural Sciences, Computer Science Department, Tbilisi, Georgia
email: nugzar chankvetadze <slevin1012@gmail.com>

The partially unknown boundary problems of elasticity theory (full-strength contours finding problem) are considered to be most important problems, their solvability provides controlling stress optimal distribution selecting the appropriate hole boundary.The article addresses the axial symmetric problem of plane elasticity theory for doubly connected domain whose outer boundary presents the regular rhombus boundary, while the inner boundary is sought full-strength hole. Let to every link of the broken line be applied absolutely smooth rigid punches with rectilinear bases which displace to the normal under the action of concentrated normally compressive forces. There is no friction between the given elastic body and punches. Let uniformly distributed normal stress be applied to the unknown full-strength contour.Under these assumptions tangential stresses are zero along the entire boundary of the domain and normal displacements of every link of broken line of the outer boundary are the piecewise - constant functions.

Using the methods of complex analysis, the body stress state and the unknown boundary of full-strength hole are determined. Numerical analysis is performed and the corresponding graphs are constructed.