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STRESS INTENSITY FACTORS AT THE CUSP OF THE DOUBLY SYMMETRIC CUT WITH VARIOUS BOUNDARY DISPLACEMENTS AND STRESSES

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Introduction

Both the first and the second basic problems of the theory of elasticity are solved simultaneously for the plane with a doubly symmetric two-cusp cut and the sress intensity factors at the right cusp are obtained.

Analysis

In [1] the first and the mixed (contact) problems of the theory of elasticity for a plane with a doubly symmetric two-cusp cut are solved. The domain is the image of the unit disk exterior $E^- = \{ \zeta=\xi+i\eta, \ |\zeta|>1 \}$ under the mapping by the function

$$z(\zeta) = \frac{i(b^2\zeta^2+1)}{\zeta(b^2-1)} + \frac{\zeta(b^2-1)}{i(b^2\zeta^2+1)}, \quad b>1,$$

which contains the parameter $b>1$. We have the plane with the