



Pergamon

Mechanics Research Communications, Vol. 24, No. 3, pp. 303-307, 1997
Copyright © 1997 Elsevier Science Ltd
Printed in the USA. All rights reserved
0093-6413/97 \$17.00 + .00

PII S0093-6413(97)00027-X

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

E. Shirokova and N. Ivan'shin
Department of Mechanics and Mathematics, Kazan University,
Kazan, 420008, Russia

(Received 3 October 1996; accepted for print 18 December 1996)

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 stress 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