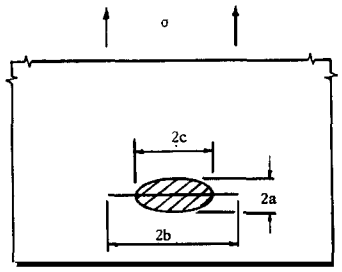

Fig. 3. Problem (**I**).

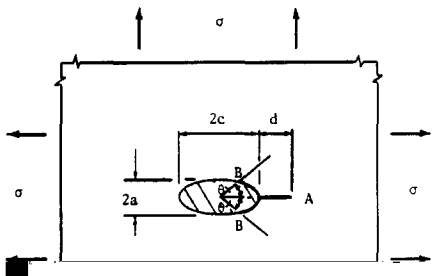

Fig. 5. Problem (**III**).

$$K = K_I + iK_{II} \tag{12}$$

The stresses at distance r ahead of the crack-tip are related to this complex stress intensity factor by

$$\frac{1}{(\quad + i\sigma \quad)!} \frac{Kr^{-i\epsilon}}{\quad} \tag{13}$$

$$K_o = |K| = \sqrt{K_I^2 + K_{II}^2} \tag{16}$$

$$\Psi = \tan^{-1}(K_{II}/K_I) \tag{17}$$

It can be shown (see, e.g. Ref. 44) that the maximum amplitude of the singular stresses in the vicinity of the

phase angle Ψ^* are obtained for the various geometric and material property parameters considered. Tables 3a

10. Liu, X.H. & Erdogan, F. The crack inclusion interaction problem, *Engng. Fract. Mech.*, 1986, **23,** 821–832.