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Solution of the Kirsch problem for a binary mixture in the case of approximation $N = 1$ of Vekua's theory. (English) [Zbl 1425.74128](#)

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Summary: We consider a boundary value problem for an infinite plate with a circular hole. The plate is the mixture of two isotropic elastic materials. The hole is free from stresses, while unilateral tensile stresses act at infinity. The state of plate equilibrium is described by the system of differential equations that is derived from three-dimensional equations of equilibrium of an elastic binary mixture (Green-Naghdi-Steel model) by Vekua's reduction method. The problem is solved analytically by the method of the theory of functions of a complex variable.

MSC:

[74E30](#) Composite and mixture properties

[74B05](#) Classical linear elasticity

[74S70](#) Complex-variable methods applied to problems in solid mechanics

Keywords:

[binary mixture](#); [infinite plate with a circular hole](#); [I Vekua's theory of plates](#); [Kirsch problem](#); [analytical solution](#)

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