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**A hybrid finite element analysis of interface cracks.** (English) Zbl 0847.73063  
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A versatile finite element scheme consisting of special crack-tip elements and crack-face contact elements is proposed to analyse a partially closed interface crack between two dissimilar anisotropic elastic materials. The crack-tip element incorporates higher order asymptotic solutions for an interfacial crack-tip. These solutions are obtained using the complex variable Stroh formalism. For a closed interfacial crack-tip, a generalized contact model in which the crack-tip oscillation is eliminated is adopted in the calculation. The hybrid finite element modelling allows the stress singularity at an open and closed crack-tip to be accurately treated. The accuracy and convergence of the developed scheme are tested with respect to the known interface crack solutions. Utilizing the numerical scheme, the stress intensity factors and contact zone are calculated for a finite interface between a laminated composite material.

Reviewer: [P.Narain \(Bombay\)](#)

**MSC:**

[74S05](#) Finite element methods applied to problems in solid mechanics  
[74R99](#) Fracture and damage

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**Keywords:**

[crack-tip elements](#); [crack-face contact elements](#); [anisotropic elastic materials](#); [asymptotic solutions](#); [Stroh formalism](#); [generalized contact model](#); [stress singularity](#); [convergence](#); [contact zone](#); [laminated composite material](#)

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