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**Debonding of FRP and thin films from an elastic half-plane using a coupled FE-BIE model.**

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Summary: A Finite Element-Boundary Integral Equation (FE-BIE) coupling method is proposed to investigate a flexible bar weakly attached to an elastic orthotropic half-plane. Firstly, the analysis focused on the case of a bar subjected to horizontal forces and thermal loads considering interfacial displacements linearly proportional to the tangential traction. Secondly, the debonding behaviour of a composite reinforcement glued to a substrate has been modelled. Using an incremental nonlinear analysis, a bilinear elastic-softening interfacial traction-slip law has been implemented simulating the delamination of pure mode II. Finally, the influence of the anchorage length on the ultimate bearing capacity of the adhesive joint has been investigated.

**MSC:**

- [74S15](#) Boundary element methods applied to problems in solid mechanics
- [74S05](#) Finite element methods applied to problems in solid mechanics
- [65N38](#) Boundary element methods for boundary value problems involving PDEs
- [74K35](#) Thin films

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[mixed variational principle](#); [Green function](#); [weak interface](#); [debonding](#); [FRP-strengthening concrete](#)

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