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| Autoren | M. Grafen, H. Rapp |
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Abstract

This paper deals with the delamination of non-homogeneous composite structures. A bonded joint loaded in shear is considered. The adherends are described by the theory of an elastic bar. An exponential material model is used for analysing delamination failure in the adhesive layer. This model is also able to take decohesion into account. The stresses in the adhesive layer between two adherends are characterized by a traction displacement relation. The stiffness of these interface is defined by the energy release rate and a strength parameter [sigma]max. For simplification a linear approach of the decohesion model is made. The resulting system of first order linear differential equations is solved and leads to the transfer matrix method. Non-homogeneous transverse crack tension specimens are designed. Force displacement curves of the specimens are recorded and compared with numerical results.