

Discrete / Finite Element Modelling of Failure in Fibre Composites

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The aim of this work is to enrich a theory for the non-linear analysis of failure in long fibre reinforced composites by Puck. It has previously been implemented into a routine to run within the ABAQUS program, both for a two and three dimensional approach. Three statistical models, for direct, transverse and shear failure of unidirectional plies, were embedded into the routine. These models all use the discrete element approach. The direct model was implemented within this work. Experiments on glass fibre reinforced composites were made and the results were compared to the predictions obtained by the single models and by the enriched Puck implementation as well, to show their general reliability.

