

NUMERICAL SIMULATION OF TENSILE CRACKS: OBSERVATIONS OF BLUNTING EFFECTS AND JOINT LINKAGES IN NATURAL PATTERNS

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In this work we show numerical results for the interaction amongst set of cracks subject to constant remote stresses. The modeling technique simulates the response of elastic solids by means of finite elements for stress analysis at various sizes and models. Different geometries have been tested in an attempt to reproduce and understand joint development processes. This study suggests that an initiation of fractures according to a Griffith criterion could explain the observed pattern of joint linkages and distributions observed in the field. In particular we show a crack blunting effect associated with orthogonal and oblique fractures which may explain the common observation of T- and Y-junctions in natural joint patterns.