THROUGH THICKNESS EVOLUTION OF CRACK TIP PLASTICITY

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Experimental methods to measure fracture mechanics parameters tend to provide information from or about the surface of cracked components. However, information about the interior of the component is key to understanding the mechanisms governing the damage processes at a crack tip for both fatigue and fracture events. In this work we present a detailed numerical analysis of the evolution of the plastic zone through the thickness of an aluminium alloy specimen. This is done by means of ultra-fine non-linear finite element models. The simulated results are compared with experimental displacement data measured optically from the surface of the specimen.

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