

# MEASUREMENT OF CRACK TIP DEFORMATIONS USING A GRID OF CIRCULAR DOTS

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## Abstract

A 3D computer vision was used to measure the stress intensity factor  $K_I$  of a mode I fracture specimen. The fracture specimen used in this study was a compact tension (CT) specimen made of 6061-T6 aluminum. A grid of dots was positioned on the specimen surface along  $\pm 60$ -deg radial lines drawn from the crack tip. Then the 3D computer vision was used to acquire the images around the crack tip before and after the deformation of the CT specimen, respectively, so that the method of interpolated ellipses can be used to determine the magnitude and direction of in-plane principal strains on the specimen surface to evaluate the stress intensity factor.

Keyword : Interpolated ellipse, Stress intensity factor, 3D computer vision