

# Experimental Study in Determining the Stress Intensity Factor by Using the Grid Method

羅鵬飛, 蔡勇毅

Mechanical Engineering

Engineering

luo@chu.edu.tw

## Abstract

Grid method 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 bonded along a radial line on the surface of the CT specimen. A 2D computer vision was used to acquire the images around the crack tip before and after the deformation of the CT specimen. Then the method of single dot was used to measure the magnitude and direction of the in-plane principle strains at the dot centers. Experimental results indicate that the measured strains can be used to accurately determine  $K_I$ .

Keyword : circle grid, ellipse, stress intensity factor, 2D computer vision