

## Estimation of Stress Intensity Factors from near Crack Tip Field

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**Abstract :** All current experimental methods for determination of stress intensity factors are based on the assumption that the state of stress near the crack tip is plane stress. Therefore, these methods rely on strain and displacement measurements made outside the near crack tip region affected by the three-dimensional effects or by process zone. In this paper, we develop and validate an experimental procedure for the evaluation of stress intensity factors from the measurements of the out-of-plane displacements in the surface area controlled by 3D effects. The evaluation of stress intensity factors is possible when the process zone is sufficiently small, and the displacement field generated by the 3D effects is fully encapsulated by K-dominance region.

**Keywords :** digital image correlation, stress intensity factors, three-dimensional effects, transverse displacement

**Conference Title :** ICAMME 2015 : International Conference on Applied Mechanics and Mechanical Engineering

**Conference Location :** Stockholm, Sweden

**Conference Dates :** July 13-14, 2015