

## A three dimensional limit load solution for highly undermatched single edge cracked specimens in pure bending

### Abstract

The accuracy of defect assessment methods for cracked structures depends on the accuracy of limit load solutions. The present paper focuses on a new method to construct simple three-dimensional kinematically admissible velocity fields for highly undermatched welded joints with edge cracks and its application to single edge cracked specimens in pure bending. The objective is to take into account specific features of flow pattern in highly undermatched joints to propose three-dimensional kinematically admissible velocity fields whose level of complexity as well as accuracy of limit load predictions are comparable with plane strain fields. The three-dimensional solution found for single edge cracked specimens in pure bending is compared to available semi-analytical plane strain solutions. Several feasible ways to improve the solution found are proposed.