

## **Investigation on the stability of rock slopes subjected to tension cracks via limit analysis**

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**Abstract :** Based on the kinematic approach of limit analysis, a full set of upper bound solutions for the stability of homogeneous rock slopes subjected to tension cracks are obtained. The generalized Hoek-Brown failure criterion is employed to describe the non-linear strength envelope of rocks. In this paper, critical failure mechanisms are determined for cracks of known depth but unspecified location, cracks of known location but unknown depth, and cracks of unspecified location and depth. It is shown that there is a nearly up to 50% drop in terms of the stability factors for the rock slopes intersected by a tension crack compared with intact ones. Tables and charts of solutions in dimensionless forms are presented for ease of use by practitioners.

**Keywords :** Hoek-Brown failure criterion, limit analysis, rock slope, tension cracks

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