

The stability analysis of jointed rock slope

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Summary

This paper is to study the stability of jointed rock slope using the Goodman joint element and upper bound limit analysis. Assumed the constitutes of rock masses, rock block and joint, obey perfect rigid plasticity and Mohr-Coulomb yield criterion, an upper bound finite element formulation is build to study the stability analysis of jointed rock slope using the Goodman joint element. A nonlinear mathematical programming is formulated with equation constraints and the loading factor of external load or self-weight as the objective function, and a direct iterative algorithm is constructed to solve it. Numerical results are given to illustrate the direction of joints is sensitive to the slope stability. This method is effective to the design and analysis of jointed rock slope.

Key words: jointed rock mass; slope stability; upper bound limit analysis; Goodman joint element

