

Computational elastoplasticity of rocks : new theoretical and numerical framework

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Problem background

- Circular criteria (Drucker-Prager) implemented in FEM softwares are not satisfactory from a physical point of view
- Computing plastic strain for uncircular smooth criteria is complex, cumbersome and time consuming.

General yield function

- smooth and convex
- we can propose a smooth Høek-Brown close to the original criterion.

Equivalence between the closest point projection and a bounded geometric problem

- Solutions of the geometrical problem are independently calculated once, then stored.
- Value of plastic strain can be directly obtained.