

## عنوان مقاله:

Deformability of Rock Fractures with Correlated Fracture Length and Aperture

## محل انتشار:

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## خلاصه مقاله:

The effect of stress on deformability and normal stiffness of fractures in fractured rock masses is studied when distributed fracture aperture is correlated with fracture trace length. A new nonlinear constitutive model of rock fractures is developed for prediction of normal stress- normal displacement behavior of fractures based on the correlation between aperture and length. The results of sensitivity analysis about the effect of the ratio of maximum fracture closure with respect to the initial hydraulic aperture on fracture deformability show that there might be a positive correlation between maximum allowance of fracture closure and critical normal stress with initial hydraulic aperture. This correlation enables us to predict the overall hydro-mechanical behaviors of fractured rocks, considering the coupling between spatial variation of geometric characteristics and mechanical behaviors of rock fractures. This study is more methodology development about fractures behavior in stress field for conceptualization of the deformability behavior of rock fractures using the numerical modeling such as Discrete Element Method approach. However adequate characterization of the fracture system geometry, mechanical behaviors and properties of individual fractures and in-situ stress condition are necessary for more realistic understanding and quantification of mechanical and hydraulic properties of fractured rocks in the field.

## کلمات کلیدی:

Aperture-trace length correlation, Fracture rocks, Discrete fracture network, Deformability of fractures, Normal stiffness

## لینک ثابت مقاله در پایگاه سیویلیکا:

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