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Effects of fracture surface roughness and shear displacement on geometrical and hydraulic properties of three-dimensional crossed rock fracture models

Na Huang , Richeng Liu , Yujing Jiang , Bo Li , Liyuan Yu

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Highlights

- A numerical code was developed to assess the effects of fracture surface roughness and shear displacement on hydraulic properties of 3D crossed fractures.
- Shear displacement significantly changes both flow pathlines and permeability.
- Fracture surface roughness enhances the channeling flow effect and decrease the permeability.
- Permeability anisotropy is significant after the shear displacement exceeds a certain value.

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