

O219-017

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Numerical simulations of borehole breakouts in sandstones using coupled DEM+VOF

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A new method coupling with DEM and VOF to realize the numerical simulations of solid fracture due to fluid flow is developed. Simulations are performed in three dimensions. Initially, sandstones are modeled by particles bonded together in DEM and tested by tri-axial compression test to match with the behavior of real sandstones in laboratory experiments. We compare the shape and mechanism of failure around vertical boreholes drilled in model blocks of sandstones subjected to given stress conditions.