

Numerical Simulation of Rock Fragmentation Process Induced by Indenter

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Key Words: *numerical simulation, rock fragmentation, fractal growth characteristics*

Abstract: The rock fragmentation process induced by indenter is numerically simulated by utilizing finite element method. The fractal dimension of rock fragmentation under different displacement at the top is calculated by using regression analysis method. The investigation shows that the rock fragmentation process induced by indenter has fractal characteristics which can be classified into three significant stages. In these three stages fractal dimension has different variation trends. Fractal dimension can be used in analyzing the process of rock fragmentation process induced by indenter effectively. When displacement at the top reaches to some extent, the funnel-like destruction appears. At the same time, fractal dimension reaches a critical value which remains unchanged. The critical value can be used to quantitatively characterize the rock fragmentation degree.

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