

عنوان مقاله:

Numerical assessment of influence of confining stress on Kaiser effect using distinct element method

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خلاصه مقاله:

Nowadays acoustic emission (AE) testing based on the Kaiser Effect (KE) is increasingly used to estimate the in-situ stress in laboratories. In this work, this effect is assessed on cylindrical specimens in numerical simulations of the cyclic loadings including loading, unloading, and re-loading cycles using a 3D code called the particle flow code (PFC) based upon the distinct element method. To achieve this objective, at first, the numerical model is calibrated using a laboratory test performed on the selected sandstone specimens. The results obtained show that PFC and the distinct element code are useful tools used to investigate the damage and KE of a brittle rock. Also the results obtained by the triaxial modeling show that a combination of triaxial loading stresses change the results of uniaxial loading. Further, KE is influenced under confining stresses so that larger confining stresses lead to greater differences between the KE stress during the uniaxial and pre-stress loadings.

کلمات کلیدی:

Kaiser Effect, Confining Stress, Numerical Modeling, Rock, Particle Flow Code

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