

# **TRIAXIAL TESTING NUMERICAL ANALYSIS USING DEM SOFTWARE**

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## **Abstract**

The triaxial test is a method to determine the mechanical properties of solids such as soil and clay. Since soil's behavior is predictable based on its properties, the parameters used in physical triaxial testing can be quantified into a numerical analysis that replicates the physical test. This research used a discrete element method (DEM) software package called PFC3D that modeled granular soils to illustrate the use of periodic domain distortion to install an isotropic stress state. At this stress state, a triaxial compression test was performed at a constant strain rate and constant lateral stress on a granular assembly. Three simulations were completed at three constant stresses: 25 kPa, 50 kPa, and 100 kPa. A shear failure analysis was performed for these three simulations, and the results were comparable to physical triaxial testing outcomes.