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Comparing Mohr Coulomb and Drucker Prager function in three dimensional analysis on rock

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Rapid development is happening in the solution of engineering problems in recent years. The most important of all, develops in the area of computer software with no doubt. There are many programs that are finite element, finite different boundary element based. Some of these programmes use the Mohr-Coulomb failure criterion for the purpose of mining problems. This function is not very suitable in the solution of three dimension elasto-plastic problems. Mohr-Coulomb and Drucker-Prager functions are defined in a very similar manner. However, Mohr-Coulomb elastic-plastic model does not represent hardening behavior exhibited by most geologic materials and no yield under stress. On the other hand, Drucker-Prager plasticity model is an approximation of the Mohr-Coulomb failure criterion. Both, Mohr-Coulumb and Drucker-Prager fonctions have been analyzed with Gauss Elimination Method and Newton-Raphson Method, respectively and clearer results can be obtained by adopting the Drucker-Prager function to the Mohr-Coulomb function.

Keywords: Drucker-Prager, Mohr-Coulomb, Rock Mechanics.