عنوان مقاله:

A Laboratory Study on Stress Dependency of Joint Transmissivity and its Modeling with Neural Networks, Fuzzy Method and Regression Analysis

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خلاصه مقاله:

Correct estimation of water inflow into underground excavations can decrease safety risks and associated costs. Researchers have proposed different methods to asses this value. It has been proved that water transmissivity of a rock joint is a function of factors, such as normal stress, joint roughness and its size and water pressure therefore, a laboratory setup was proposed to quantitatively measure the flow as a function of mentioned parameters. Among these, normal stress has proved to be the most influential parameter. With increasing joint roughness and rock sample size, water flow has decreased while increasing water pressure has a direct increasing effect on the flow. To simulate the complex interaction of these parameters, neural networks and Fuzzy method together with regression analysis have been utilized. Correlation factors between laboratory results and obtained numerical ones show good agreement which proves usefulness of these methods for assessment of water inflow.

کلمات کلیدی:

Fractured Rock Mass, Stress Dependent Transmissivity, Neural Network, Fuzzy Method