

深部巷道破裂围岩强度衰减规律试验研究

牛双建^{1, 2}, 靖洪文¹, 杨旭旭¹, 杨圣奇^{1*}

(1. 中国矿业大学 深部岩土力学与地下工程国家重点实验室, 江苏 徐州 221008;
2. 河南理工大学 能源科学与工程学院, 河南 焦作 454000)

EXPERIMENTAL STUDY OF STRENGTH DEGRADATION LAW OF SURROUNDING ROCK FRACTURED ZONE OF DEEP ROADWAY

NIU Shuangjian^{1, 2}, JING Hongwen¹, YANG Xuxu¹, YANG Shengqi^{1*}

(1. State Key Laboratory for Geomechanics and Deep Underground Engineering, China University of Mining and Technology, Xuzhou, Jiangsu 221008, China; 2. School of Energy Science and Engineering, Henan Polytechnic University, Jiaozuo, Henan 454000, China)

摘要

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摘要 为研究深部巷道破裂围岩强度衰减规律,设计模拟巷道破裂区应力演化规律的应力路径,采用MTS815岩石力学伺服试验机对完整的砂质泥岩试样进行加卸载试验,得到不同损伤程度的初始损伤岩样;通过单试件法对初始损伤岩样在不同围压下的三轴强度特性进行试验研究。采用卸载点的应力减低比 $D?$ 、体积膨胀比 DV 作为损伤变量,分别建立损伤岩样峰值强度及强度参数与二者的函数关系,研究成果表明,初始损伤岩样的峰值强度、黏聚力与内摩擦角随损伤程度的增大大幅减小,且呈指数衰减规律。

关键词: 岩石力学 深部巷道 应力路径 初始损伤 强度衰减

Abstract: In order to study the strength degradation law of surrounding rock in fractured zone of deep roadway, the loading-unloading tests on intact sandy mudstone samples were implemented according to the stress path simulating the changing law of stress in fractured zone of roadway by applying the MTS815 servo-controlled rock mechanics testing machine. The initial damaged rock samples for different broken levels were obtained and their triaxial strength characters under varying confining pressures were tested with single block method. The strength degradation ratio and volume expansion ratio DV were applied as damage valuables at unloading point; and the function relationships between peak strength, strength parameters of initial damaged rock samples and $D?$, DV were established. The study results indicate that the peak strength, cohesion and internal friction angle decrease greatly with the increasing broken level in exponential degradation law.

Keywords: rock mechanics deep roadway stress path initial damage strength degradation

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