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真三轴软岩非线性力学试验系统研制

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摘要 根据深部软岩非线性力学行为研究的需要，针对目前的试验系统不能进行三向拉压、拉剪复合应力试验及加卸载过程模拟的不足，研制了一套能进行三轴拉压、拉剪等多种组合试验和对不同加卸载过程进行模拟的试验系统。介绍这一试验系统的主要结构、技术标准、功能和为取得满意的试验效果所研制和采用的减摩、传力和应力集中消除等技术，所述的试验系统为深入研究深部工程岩体的力学行为提供新手段。

关键词 岩石力学；深部软岩；复合应力状态；力学试验系统；关键技术
分类号

DEVELOPMENT OF NONLINEAR TRIAXIAL MECHANICAL EXPERIMENT SYSTEM FOR SOFT ROCK SPECIMEN

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Abstract
In consideration of the requirements for nonlinear mechanical behaviors of soft rock at depth，the development of a new experimental system for rock mechanics is discussed，which can perform the multiple composite tests of tension-compression and tension-shearing under the conditions of different loading processes including the common function such as uniaxial tension，shearing，uniaxial and triaxial compression tests. To overcome the deficiency of the current experimental system (for rock mechanics) that cannot perform the composite tests of tension-compression，tension-shearing，and different loading or unloading process simulations，the main structures and functions of the system，the technical indexes，and the key technologies to achieve satisfactory experimental results such as reduction of friction force technology，equal-transmitting force technology，and stress-concentration elimination technology，etc.，are introduced. The presented new experiment system can provide a new method to further study of mechanical behavior of rock mass at depth.

Key words rock mechanics；deep soft rock；composite stress state；mechanical experiment system；key

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