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节理岩体数值计算方法及其应用(二): 工程应用

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摘要 叙述了进行岩体工程问题数值分析的一般工作原则、方法和步骤, 强调了数值计算对工程实践认识和经验的依赖性。介绍了合理选择岩体力学参数的经验(统计)方法, 通过实例比较, 认为中国水电工程界岩体强度参数取值可能明显偏低并有可能导致对数值计算结果理解的偏差。通过利用Itasca程序应用实例论述了高地应力条件下研究岩体潜在问题的应力路径法, 同时说明了低应力条件下结构面控制问题的模拟方法与实际应用成果。

关键词 [岩石力学; 数值计算; 离散元; 粒子流; 应力; 地质结构](#)

分类号

NUMERICAL MODELLING METHODS AND APPLICATION IN JOINTED ROCK MASS, PART 2: APPLICATION FOR ENGINEERING PRACTICE

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Abstract

This paper presents the general outline, approach, and procedure of application for numerical modelling methods in rock engineering practices. It is emphasized for numerical analysis to rely on engineering realization and engineering experience when using numerical method to solve engineering problems. An empirical approach is consequently introduced to reasonably estimating the mechanical properties of rock mass. It is also pointed out that the rock mass strengths are significantly underestimated in hydropower engineering practices in China when comparing to the corresponding rock mass properties from mining projects in Canada. Such underestimation is likely to lead to a misunderstanding of numerical modelling results. Additionally, the stress path analysis based on numerical simulations is recommended for the study on stress-induced rock mass problems whereas modelling the behaviour of geological structures is suggested when carrying out numerical investigations under low in-situ stress conditions. All suggestions for these two scenarios are illustrated with application cases of the Itasca program into numerical study of corresponding engineering concerns.

Key words [rock mechanics, numerical calculation; distinct](#)

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