

报告题目: 基于钻孔过程监测技术的岩体质量评价

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摘要: 钻孔钻进过程本身就是一种定量岩体力学性质原位测试方法。自动采集和深度分析各类钻孔过程中的钻具响应信息, 不但能丰富工程钻探数据库, 对提升岩体认知水平与工程勘察技术也具有重要意义。通过对钻孔过程监测信息与岩层工程特性相关性分析, 提出了钻进过程指数(DPI)、切深斜率(Kslope)和单位体积钻进能量( $\eta_e$ )三个新指标, 建立了通过钻孔过程监测确定岩体完整性、单轴抗压强度和耐磨性参数的新方法。目前该技术和设备已在大藤峡水利枢纽工程、云南德厚水库工程、吉林引松工程等重大水利水电工程中成功实践。为在不增加现场勘察工作量的前提下实现岩体参数和质量快速测定提供了一种新方法和手段。

**Evaluation of Rock Mass Quality Based on Drilling Process Monitoring Technology**

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Abstract: The drilling process itself is a quantitative in-situ test method of rock mechanical properties. Automatic collection and in-depth analysis of drilling tool response information in various drilling processes can not only enrich the engineering drilling database, but also improve the understanding level of rock mass and engineering survey technology. Based on the correlation analysis between the information from drilling process monitoring and rock stratum engineering characteristics, three new indexes of drilling process index (DPI), slope between thrust and penetration per revolution (Kslope) and energy dissipation per unit volume of drilling ( $\eta_e$ ) are proposed. A new method for determining rock mass integrity, uniaxial compressive strength and rock abrasiveness through drilling process monitoring is also established. At present, the technology and equipment have been successfully applied to major water conservancy and hydropower projects such as Da-Tengxia project, Dehou anti-seepage engineering, Songhua Water Transfer Project and so on. It provides a new method and mean to realize the fast determination of rock mass parameters and quality without increasing the work of field investigation.