

## 锦屏I级水电站地下厂房围岩变形破裂的三维损伤流变分析

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## 3D DAMAGE RHEOLOGY ANALYSIS OF DEFORMATION AND FRACTURE OF SURROUNDING ROCKS IN JINPING I HYDROPOWER STATION UNDERGROUND POWERHOUSE

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摘要

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**摘要** 锦屏I级水电站处于高地应力区, 地下厂房围岩在此是表现有一定塑性的大理岩。在工程开挖后围岩和支护结构的变形开裂特征明显。针对这些特点, 采用损伤流变耦合的三维模型和分析方法, 结合运用裂隙张开产生的附加变形分析法, 对该工程地下厂房洞室群的稳定性进行分析, 将厂房若干关键点的位移量与实测值进行对比, 取得了较好的结果; 同时, 对洞室的长期时效变形进行预测分析。

**关键词:** [数值分析](#) [三维损伤流变模型](#) [劈裂破坏](#) [地下洞室群](#) [张开位移](#)

**Abstract:** Jinping I hydropower station is located in a high initial stress area, the surrounding rock is the marble and in this area behaves in obvious plasticity. After excavation, the deformation and cracking phenomena in the surrounding rock and support structures are obvious. In view of these features, a coupled damage rheology 3D model and analysis method and prediction method for incremental deformation due to crack opening are adopted for caverns stability analysis. And the computation displacement is compared with the field monitoring data. It is shown that the two results are in good agreement with each other. Furthermore, the long-term displacements of surrounding rocks are predicted and analyzed.

**Keywords:** [numerical analysis](#) [3D damage rheology model](#) [splitting failure](#) [underground cavern group](#) [opening displacement](#)

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