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重大工程实践

3D激光扫描工艺与锦屏 I 级水电工程右岸建基面绿片岩实测迹长分布研究

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摘要:

锦屏 I 级水电站右岸建基面发育有大量的绿片岩,它们是水电站建设中重大工程地质问题研究中需要注意的对象之一。为了研究它们的迹长分布规律,利用3D激光扫描工艺,对锦屏 I 级水电工程右岸建基面高差50m范围内的绿片岩出露区域进行了扫描,获得了准确的绿片岩出露的迹长数据,从而使绿片岩迹长分布研究成为可能。研究发现,迹长数据样本最集中分布于0~3m的区间;随着迹长的增加,落在子区间内的条数(频数)递减;在0~9m的各个子区间内,样本呈正态分布。整体而言,实测迹长样本数据服从对数正态分布。

关键词: 3D激光扫描 实测迹长 绿片岩 对数正态分布 概率分布密度

3D LASER SCANNING TECHNIQUE AND STUDY ON TRACE LENGTH DISTRIBUTION OF GREEN SCHIST FOR THE RIGHT ABUTMENT OF JINPING I HYDROPOWER STATION ENGINEERING

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Abstract:

A number of green schist rocks developed on the right abutment of Jinping I Hydropower Station. They are one of the important engineering geology problems for the stability of abutment. In order to study their trace length distribution, the technique of 3D laser scanning was applied. The zone of green schist outcrop was scanned with it. The elevation of scanned zone ranged from 1720 to 1670m, and fall is up to 50m, scanned area 3500m². After the interpretation of points cloud for these green schist rocks, resulting trace length data were attained accurately, which provided the possibility to study the trace length distribution of green schist rocks. Based on study, it was found that trace length data mainly were grouped to the zone of 0 to 3m. With the growth of trace length, the number of trace length was getting less and less in every subinterval; in the range from 0 to 9m, samples showed Normal Distribution in every subinterval. As for all of samples, the trace length showed Logarithmic Normal Distribution.

Keywords: 3D laser scanning Field measurement
trace length Green schist Logarithmic Normal
Distribution Probability density

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