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基于坐标投影图解的结构面和块体的计算机描述及其应用

杨志法¹, 高丙丽², 张路青¹, 曾庆利¹

(1. 中国科学院 工程地质力学重点实验室, 北京 100029; 2. 西安科技大学, 陕西 西安 710054)

收稿日期 2006-4-7 修回日期 2006-4-24 网络版发布日期 2006-12-30 接受日期 2006-4-7

摘要 随着人类活动(特别是工程活动)的增加, 滑坡、地下工程大塌方等地质灾害也在增多, 相应的防灾减灾任务也越来越重。研究表明, 这些灾害的发生往往与地质结构面密切相关。因此, 在研究滑坡和塌方的方式、规模和防治方法的同时, 应重点考虑地质结构面及其与临空面组合切割而形成的块体的几何条件。为了准确地描述这些块体并进行稳定分析, 提出赤平极射投影作图法。赤平极射投影作图法的优点是能很好地把工程地质条件和块体稳定性分析结合在一起, 不足之处则在于难以解决多块体问题且图解效率较低。针对前一个不足, 提出坐标投影作图法。为了提高图解效率, 还进一步根据坐标投影作图法的原理编写相关程序, 为滑坡、塌方的预测和防治提供了一种新技术手段。

关键词 [工程地质](#); [地质灾害](#); [结构面](#); [块体](#); [坐标投影作图法](#)

分类号

COMPUTER DESCRIPTION OF STRUCTURAL PLANES AND BLOCKS BASED ON COORDINATION PROJECTION DIAGRAM AND ITS APPLICATION

YANG Zhifa¹, GAO Bingli², ZHANG Luqing¹, ZENG Qingli¹

(1. Key Laboratory of Engineering Geomechanics, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China; 2. Xi'an University of Science and Technology, Xi'an, Shaanxi 710054, China)

Abstract

As human activities(especially engineering activities) increase in quantities and scopes, geological hazards resulted from landslides or underground collapses are even more frequent. For this reason, preventions and reductions of the geological hazards also become very important and necessary. It is indicated in many studies that those hazards are often closely related with geological structural planes. Therefore, geometrical conditions of the structural planes and blocks resulted from the combination and intersection of the structural planes and free surfaces should be carefully considered for the investigation into modes, scales and countermeasures of landslides or underground collapses. To describe those blocks and analyze their stabilities, the stereographic projection diagram method is developed and employed. This method is characterized by a better combination of engineering geological conditions and block stability analysis; however, it has difficulties in solving multiple blocks and lower efficiency in diagrammatic process. According to the former shortage, the coordination projection mapping method(CPMM) is given. To increase diagramming efficiency, the computer procedures based on the CPMMs are programmed. It is expected that the presented diagram method will become a new technique for prediction and prevention of landslides or collapses.

Key words [engineering geology](#); [geological hazards](#); [structural planes](#); [blocks](#); [coordination projection mapping method\(CPMM\)](#)

DOI:

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