岩石力学与工程学报　2005 24 (19): 3487　ISSN: 1000-6915 CN: 42-1397/O3

边坡变形曲线的正态特性及模糊优选法定权研究

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收稿日期 2005-6-25 修回日期 2005-7-21 网络版发布日期 2007-3-23 接受日期 2005-6-25

摘要　岩土体蠕变曲线是描述边坡变形的重要方式，其位移－时间曲线三阶段过程被视为是滑坡滑动时间预报的基本标准，据此提出了许多滑坡预报方法。研究发现它与正态分布曲线非常相似，基于此，首次提出了用修复的正态分布曲线拟合蠕变曲线的方法和模型。同时考虑岩土工程的随机性和模糊性，应用模糊优选理论对有关数学模型解算中权的确定进行了研究，并给出了相应的计算权重模型。由于模型是对蠕变曲线所有阶段进行拟合，因此有望实现滑坡的全程预测预报。实际计算结果表明，所提出的方法具有一定的实用性。

关键词　边坡工程；蠕变曲线；正态特性；优选法定权

分类号

STUDY ON NORMAL DISTRIBUTION CHARACTERISTICS OF CREEP CURVES OF SLOPE DEFORMATION AND WEIGHT DETERMINATION WITH FUZZY OPTIMIZATION

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Abstract

The creep curve of rock and soil mass is an important way to describe slope deformation. Three stages of the time-displacement curves are regarded as the basic standard of landslide time determination. Many forecast methods are put forward according to the standard. Results of landslide displacement curve reveal that the shape of creep curve is very similar to that of part of normal distribution curve. The method and corresponding models are firstly presented to fit observation data of creep with renovated normal distribution curve. In view of the fuzzy and random characteristics of the rock and soil engineering，the fuzzy optimization theory is applied to the weight determination in the model calculation；and the weight determination model is given. The model is fitted to all stages of creep curve；so it is promising to realize the whole stage forecast of landslide. The prediction result shows that the proposed method is applicable.

Key words　slope engineering；creep curve；normal characteristics；weight determination with fuzzy optimization

DOI:

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