

黄土地区高边坡稳定性模糊识别法理论与应用

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收稿日期 2005-11-22 修回日期 2005-12-21 网络版发布日期 2007-1-17 接受日期 2005-11-22

摘要 边坡稳定是土木工程中十分重要的问题, 而黄土地区的边坡稳定问题则具有更加明显的地域特点。结合黄土地区的实际工程问题和土质特点, 采用多级模糊模式识别方法进行黄土边坡稳定性的分析, 充分考虑多种因素的影响, 并针对湿陷性黄土边坡稳定分析中影响因素众多、而且具有不确定性的特点, 建立相应的判别准则, 计算中对于不同的影响因素赋予不同的权重系数, 编制了实用的计算程序, 应用于实际工程, 取得良好的经济效益。此外, 采用常规的极限平衡法进行对比计算, 计算结果表明采用多级模糊模式分析性黄土地区高边坡稳定性是合理的。理论分析与实践表明, 该方法能较全面考虑黄土地区边坡多参数的影响, 使分析结果更加可靠, 计算速度更加快捷, 可用于黄土地区的高边坡工程。

关键词 [土力学](#); [黄土地区高边坡](#); [稳定性](#); [隶属函数](#); [多级模糊识别](#)

分类号

THEORY AND APPLICATION OF FUZZY PATTERN RECOGNITION TO STABILITY OF LOESS SLOPE

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Abstract

Slope stability is a very important problem in civil engineering, especially for the loess slope because of its specific region characteristics. A new analysis method for slope stability is proposed using multilevel fuzzy pattern recognition to analyze loess slope stability. By considering adequately the characteristics of various influencing factors and uncertain properties in the analysis of the loess slope stability, many influence factors are taken into account. Based on the proposed method, a computer software is developed. For the convenience of data input, transfer, output and handling via graphical window interfaces, the object-oriented programming language is used. The proposed method is compared with the limit equilibrium method through an engineering case. The results illustrate that the method is more credible and the computing velocity is more rapid, and also indicate that the method of the multilevel fuzzy pattern recognition is suitable for the analysis of stability in loess slope.

Key words [soil mechanics](#); [loess slope](#); [stability](#); [membership function](#); [multilevel fuzzy pattern recognition](#)

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