含软弱夹层岩体边坡的突变模式分析

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摘要　针对含软弱夹层岩体边坡失稳问题，考虑软弱夹层的应变弱化特性，运用突变理论方法，建立燕尾型突变模型。基于建立的突变模式，对含一层软弱夹层的岩体边坡定量分析滑坡演化过程中的突跳特性；对于含多层软弱夹层的岩体边坡，通过对燕尾突变模型得到的平衡曲面方程进行分析可知，其势函数最多可有4个极值点，3个控制变量的不同取值使系统处于不同的分叉点集区域，其势函数极值点的个数不同，形式也不同，相应地，系统也呈现出不同的性质，于是根据势函数极值点个数的不同，定性分析随着控制参量的变化，边坡失稳中突跳的可能性。

关键词　边坡工程；岩体边坡；燕尾型突变模型；软弱夹层

分类号

CATASTROPHE ANALYSIS OF ROCK MASS SLOPE WITH WEAK INTERCALATED LAYERS

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Abstract

The instabilities of the rock mass slope with regular weak intercalated layers are discussed；and a slope of swallowtail catastrophe model with the catastrophe theory is established. The jump property of landslide of the rock mass slope with one weak intercalated layer on the basis of slope swallowtail catastrophe mode is studied；and the probability of jump property of the rock mass slope with multiple weak intercalated layers on the basis of extreme points of potentials is qualitatively analyzed. The results show that the latter swallowtail catastrophe model potentials have four extreme points at most，and that the slope state would change with the amount of extreme points of its potentials.

Key words　slope engineering；rock mass slopes；swallowtail catastrophe model；weak intercalated layers

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