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边坡加固中预应力锚索方向角的优化设计

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摘要　提出了考虑坡面与滑面倾角影响的计算预应力锚索方向角的新方法，原有的不考虑坡面与滑面倾角影响的锚索方向角计算方法是推荐方法在坡面与滑面平行条件下的一个特例。根据锚索的运用目的、施工条件和结构要求，给出了最优锚索方向角的取值范围，比较了两种方法的锚固效果，理论和算例都证明推荐方法优于原有方法。计算结果表明，坡面与滑面的倾角差(绝对值)愈大，滑面摩擦角愈小，新老方法的锚固效益比愈大。新方法特别适用于采用大量锚索加固边坡的情况。

关键词　岩石力学；预应力锚索；优化设计；方向角；外锚头；内锚根

分类号

OPTIMUM DESIGN OF DIRECTION ANGLE OF PRESTRESSED ANCHOR CABLE IN SLOPE REINFORCEMENT

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Abstract

Taking the influence of the slope and sliding surfaces obliquities into account，a new method for determining the orientation angle of prestressed anchor cable is presented. The previous method，not considering the influence，is only a particular case of the presented method when the slope surface is parallel to the sliding surface. A range of choice for the orientation angle of prestressed anchor cable，satisfying working，constructional and structural requirements，is given. The reinforcing effect is compared between these two methods；theoretical analysis and calculation examples all confirm the advantages of the presented method over the previous one. Calculation results show that the reinforcing effect ratio of presented method to previous method is increscent with increase of the difference(absolute value) between the slope and sliding surfaces inclinations and with decrease of friction angle of sliding surface. And the increscent speed is more rapidly when the inclination angle of sliding surface is less than the inclination angle of slope surface. The presented method is especially suitable to the case when large number of prestressed anchor cables in slope reinforcement are used.

Key words　rock mechanics；prestressed anchor cable；optimum design；direction angle；anchor head；anchor root

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