节理裂隙岩体中大断面隧洞围岩与支护结构的施工过程力学状态

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摘要　采用离散单元法，对节理裂隙岩体中大断面隧洞围岩及支护结构的共同作用及施工过程力学状态，进行数值分析。采用UDEC程序中设定的支护结构单元模型和自行开发的呆滞－复活法，模拟分区施工及分段施筑的支护结构，系统地研究了大断面隧洞分步、分区施工过程中围岩与支护结构的共同作用及力学状态。数值计算结果与实测数据吻合很好。

关键词　岩石力学；节理裂隙岩体；大断面隧洞；施工过程力学状态；离散单元法；呆滞－复活法

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MECHANICAL STATE OF JOINTED ROCK MASS AND SUPPORT STRUCTURE OF LARGE TUNNEL DURING CONSTRUCTION PROCESS

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Abstract

Numerical research on the interaction between the jointed rock mass and the support structure of a tunnel of large section and the mechanical state of the whole tunnel system in the sequential process of the excavation and construction is carried out by adopting the discrete element method(DEM). By using the universal distinct element code(UDEC) built-in structure model and a new developed method—de- and reactivating method，simply D-R method，the support structure which is sequentially constructed in steps and sections is simulated. The interaction and mechanical state of the surrounding rock and the support structure in a sequential construction process for a tunnel of large section are systematically studied，and the numerical results conform very well to the reality.

Key words　rock mechanics；jointed rock；tunnel

of large section；mechanical state in the construction process；discrete element method；D-R method

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