

论文

台阶与预裂爆破岩体振动特征的对比研究

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摘要:

基于萨道夫斯基公式, 对台山核电站一期工程核岛区台阶爆破和预裂爆破的岩体振动监测数据进行分析, 结果表明: 在20~200 m的监测范围内, 预裂爆破岩体振动速度的  $K$ ,  $\alpha$  值均大于台阶爆破。通过量纲分析, 建立了台阶爆破和预裂爆破岩体振动频率与起爆段药量及爆源距的函数关系, 并通过回归分析, 对比研究两种爆破类型的振动主频, 结果表明: 主频随最大段药量或爆源距的增大均减小; 对于相同的爆源距, 预裂爆破产生的振动主频高于台阶爆破, 且随着最大段药量的增大两者差距逐渐变小; 对于相同的最大段药量, 预裂爆破主频随爆源距的衰减比台阶爆破要迅速。

关键词: 台阶爆破; 预裂爆破; 振动速度; 振动频率; 量纲分析

Comparative study on vibration characteristics of rock mass induced by bench blasting and pre splitting blasting

Abstract:

Based on Sadaovsk formula, the site monitoring data of rock mass induced by bench blasting and pre splitting blasting in Taishan Nuclear Power Station was analyzed, and the results show that the  $K$  and  $\alpha$  values of vibration velocity caused by pre split blasting are larger than that of bench blasting within the scope of 20-200 m. Through dimensional analysis, the function relation between the vibration frequency and the charge weight per delay and distance from explosion was established. Furthermore, the rock vibration frequency of these two kinds of blasting was compared by means of regression analysis. The results show that the vibration frequency decreases with the increasing of charge weight per delay or distance from explosion. The rock vibration frequency of pre splitting blasting is higher than bench blasting for the same explosion distance, and the gap becomes smaller with the increasing of maximum charge weight per delay. The attenuation with distance of vibration frequency of pre splitting blasting is more rapid than bench blasting for the same maximum charge weight per delay.

Keywords: bench blasting; pre-splitting blasting; vibration velocity; vibration frequency; dimensional analysis

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