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起爆方式对条形药包爆炸应力场的影响分析

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摘要 爆炸应力场分析是条形药包爆破作用机理研究的一个基本问题。爆轰波沿装药轴线方向的传播是影响条形药包爆炸应力场特征的重要因素。综合采用Starfield迭加法与动力有限元法，建立条形药包爆炸应力场数值分析模型。该模型利用Starfield迭加原理实现爆轰波沿装药轴线的传播，并采用动力有限元方法分析条形药包爆炸在介质中激发的应力场。结果表明：起爆点数量与起爆点位置对条形药包爆炸应力场有重要影响；在实际工程中，合理安排起爆点的数量及位置、缩小条形药包完成爆轰的时间有利于改善爆破效果。

关键词 爆炸力学；条形药包；爆炸应力场；起爆点

分类号

IMPACTS OF DETONATING MODE ON BLAST STRESS FIELD OF LINEAR EXPLOSIVE CHARGE

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Abstract

Analysis of blast stress field is a basic problem of blasting theory research about linear explosive charge. The propagation of blast wave through the linear explosive charge is an important factor which influences the characteristics of the blast stress field induced by the linear explosive charge. Combining the Starfield superposition method with dynamic finite element method，a numerical model of blast stress field research of linear explosive charge is proposed. In this model，principles of Starfield superposition are adopted to realize the propagation of blast wave through the linear explosive charge，and the dynamic finite element method is used to analyze the evolution and formation of blast stress field induced by linear explosive charge in the medium. It can be concluded that the number and position of detonating point play an important role in forming the blast stress field of linear explosive charge，and in engineering practice，it is very useful for improving the blasting effect to reduce the blast time of linear explosive charge by arranging the number and position of detonating points correctly.

Key words

mechanics of explosion；linear explosive charge；blast stress field；detonating point

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