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组合式MEFP战斗部的正交优化设计 [\(PDF\)](#)

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Title: Orthogonal Optimization Design for Combined MEFP Warhead

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关键词: [多爆炸成型弹丸](#); [发散角](#); [正交优化](#); [数值模拟](#)

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摘要: 以多爆炸成型弹丸(MEFP)为计算模型,应用显式有限元程序LS DYNA,分析了相邻子装药间距、填充物密度和起爆延迟时间三种因素对MEFP发散角的影响规律。结果表明:随着子装药间距的增加以及填充物密度、起爆延迟时间的减小,MEFP的发散角在减小。在此基础上以MEFP发散角为命中概率和毁伤概率指标,应用正交优化方法针对三种因素对MEFP发散角影响的主次关系进行了分析研究。结果表明起爆延迟时间是MEFP发散角的主要影响因素,并得到了影响MEFP发散角的三种因素各水平的最优组合。

Abstract: With multiple explosively formed projectile (MEFP) simulation model, the influence laws of MEFP space, filler material's density and delay time of initiation on divergence angle of MEFP were analyzed using the explicit finite element program LS DYNA in this paper. It showed that divergence angle of MEFP decreased with the increasing of MEFP space and decreasing of filler material's density and delay time of initiation. Regarding divergence angle of MEFP as index of damage probability on this basis, orthogonal optimization method was applied to analyze the primary and secondary relations of the three factors influencing the divergence angle of MEFP. The results indicate that delay time of initiation is the main influential factor, and an optimum combination of every level of three factors affecting the divergence angle of MEFP has been gained.

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