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Title: Effect of Nose Shape on Penetration Performance of Long-rod Penetrator and Its Mechanism

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摘要: 为探讨不同靶板类型时杆弹头部形状对侵彻行为的影响,对几种头部形状杆弹进行了数值仿真。研究表明:靶板为4340钢且入射速度较小时,杆弹头部形状对侵彻行为有一定的影响,最优头部形状是半球形,速度较大时,头部形状只在开坑阶段对侵彻行为造成影响,对弹体的最终侵彻效率影响并不大; 靶板为混凝土时,头部形状对侵彻行为有很大的影响,卵形头部弹体的侵彻能力明显强于其它两种头部形状的弹体; 并对其影响机制进行了深入的研究。

Abstract: Aimed at the influence laws and mechanism of the nose shapes of the rod penetrators on penetrating performance, the research on rod penetrators with different nose shape vertical penetrating was carried on. The results show that for the 4340 steel target, the nose shape of the penetrator has some influence on penetration depth if the incident velocity is rather small, but the optimal

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本期目录/Table of Contents
下一篇/Next Article
上一篇/Previous Article

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shape is semi-spherical rather than ogival or flat, however, if the incident velocity is big enough, the effect of nose shape on penetration efficiency is very little and which only has some influence on it in the cratering stage; For the concrete target, the nose shape has great influence on the penetration behavior and the penetration performance of the ogive-nose penetrator is distinctly better than the other two. The effect mechanism of which was also investigated.

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