

[1]刘文辉,胡忠举,刘德顺,等.弹丸对铝合金装甲板斜侵彻的数值模拟[J].弹箭与制导学报,2012,1:78-80.

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弹丸对铝合金装甲板斜侵彻的数值模拟(PDF)

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Title: Numerical Simulation of Bullet Oblique Penetration into Aluminum Armor Plate

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关键词: [斜侵彻](#); [铝合金](#); [有限元](#); [方向角](#)

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摘要: 采用ABAQUS软件和Johnson Cook材料模型,建立了弹丸斜侵彻某型铝合金装甲板的3D有限元模型。同时结合射击实验,研究了枪弹斜侵彻20mm铝合金板的过程,分析了侵彻过程中枪弹的受力特点和方向角的变化。研究表明:有限元模拟结果与实验结果的侵彻深度与宏观物理图像比较接近;当枪弹侵入靶板较深时,易发生塑性变形,弯曲的枪弹偏离滑移段的方向穿透靶板,模拟结果为研究穿甲弹斜侵彻金属靶板提供一种有效的分析手段。

Abstract: The experiments of certain armor aluminum alloy plate obliquely penetrated by bullet were carried out, and the penetration model of aluminum alloy plate impacted by bullet was created by using ABAQUS software and Johnson Cook constitutive equation, and the feature of resistance to bullet and directional change during penetration process were analyzed. Experimental and simulation results show that the penetration model can simulate the shape and depth of crater. The plastic deformation is easy to occur to bullet when the penetration depth is deep, and the bullet will penetrate through the target deviating from the slip stage direction, which can provide a useful tool to analyze the oblique penetration process of metallic target impacted by bullet.

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