

Numerical Simulation and Experimental Study of LEFP on Impact Initiation Process of Charge with Shell

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Abstract: Based on the character of near-half-cylindrical linear forming LEFP (linear explosive formed projectile), the characteristics of impacting initiation of LEFP on charge warhead with shell was studied. The dynamically intercepting impact test of LEFP formed by endpoint initiation way on shaped charge warhead with diameter of 82 mm was performed. The structure failure process of warhead was observed by a high-speed video camera. The numerical simulation model of LEFP shelled charge was established using ANSYS/LS-DYNA simulation software. Simulation analyses to intercept the process of impacting charge with shell under the conditions of forming process of LEFP, different blasting height and different initiation ways was performed. Results show that all the charge with shell measured are initiated. The average peak pressure of explosive by center line initiation is 1.17 times higher than that of explosive by endpoint initiation. LEFP has the possibility as damage element for an active defense system of armored vehicle or other air defense anti missile technology.

Key words: linear explosive formed projectile (LEFP); impact initiation; intercept; irregular fragment

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