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NUMERICAL SIMULATION ON THE SHIELDING CONFIGURATIONS WITH MIDDLE LAYER OF CORRUGATION AND HONEYCOMB CONE RESPECTIVELY

Abstract

Numerical simulation on the shielding configurations with middle layer of corrugation and honeycomb cone respectively were carried out. For the two configurations impacted normally by the Al-2024 projectile with diameter of 5.5mm and with velocity of 4.8km/s, their shielding performances of projectile ballistic crossing the different positions of corrugation and honeycomb cone were obtained. For the configuration with middle layer of corrugation, the performance was worse when the projectile ballistic crossed the front apex of corrugation sloped edge, however, the performance was better when the projectile ballistic crossed the back apex. For the configuration with middle layer of honeycomb cone, the performance was worse when the projectile ballistic crossed the apex of honeycomb cone, however, the performance was better when the projectile ballistic crossed the center of honeycomb cone. The positions of projectile ballistic crossing corrugation and honeycomb cone had evident influences on the shielding performances. When the debris were dispersed by the middle layer, the shielding performance was better. However, when the debris were assembled by the middle layer, the shielding performance was worse.

Key words: Hypervelocity impact, Shielding configuration, Corrugation, Honeycomb cone, Numerical simulation