

Abstract Submitted
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High-speed penetration of projectile with cavitator into sand

ANNA DAURSKIKH, VLADISLAV VELDANOV, Bauman Moscow State Technical University — Cavitators are used in underwater projectiles design to form a cavern in which projectile could move with no or significantly reduced drag. An investigation of possible application of this structural element for penetration into porous media was conducted. High-speed impact of a conical-shaped head projectile with cavitator was studied in terms of its influence on penetration capacity and projectile stability in sand for impact velocity about 1500 m/s. Cavitators were manufactured of steel with different strength moduli, and thus two penetration regimes (with eroding/non-eroding cavitator) were compared. Numerical simulations showing wave propagation in target and projectile were performed in AUTODYN with Johnson-Cook model for projectile and granular model for sand.

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