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Numerical Study of Liner Modification Methods Leading to Fin-stabilized Explosively Formed Penetrators NIKOLAY ASMOLOVSKIY, VLADIMIR BASKAKOV, Bauman Moscow State Technical University — One of the methods of increasing aerodynamic properties of elongated explosively formed penetrators (EFP) is inducing fins in the rear part of the projectile. In this work a set of fins generation methods was examined. Analysis showed that small amplitude wave-shaped imperfections in circumferential area of the liner provide projectile with desired finned shape without significant changes in formation process, which can reduce development cycle compared to axisymmetric EFP. Three methods of fins generation based on imperfections induced in liner were simulated numerically using commercial software. Suitable simulation technique was chosen and modified in order to treat geometrical imperfections of small amplitudes without large computational efforts. The relation between imperfection amplitude and projectile shape was obtained. It was shown that periodic nonuniform thickness is effective method of fins generation. For example, imperfection amplitude of 2% leads to fins with amplitude 10%. Material damage properties were taken into account and yielded range of acceptable imperfection amplitude.

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