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## 同心筒式发射装置附加弹射力影响因素分析

### Influential factors analysis to additional ejection force in concentric canister launcher

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中文关键词: [同心筒式发射装置](#) [附加弹射力](#) [导流锥](#) [气体动力学](#) [摩擦壅塞](#)

英文关键词: [concentric canister launcher](#) [additional ejection force](#) [diversion cone](#) [aerodynamics](#) [friction choking](#)

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中文摘要:

采用同心筒式发射装置发射导弹时, 弹底会受到附加弹射力的作用, 其值主要取决于排气狭缝宽度、增力装置、导流锥等因素. 利用动量方程积分形式推导出附加弹射力的理论公式, 分析各种因素对附加弹射力的影响, 并利用数值模拟技术进行验证. 结果表明: 筒底所承受冲击力与弹底所受的附加弹射力呈正相关; 减小内外筒间缝隙可提高弹底所受的附加弹射力; 加导流锥能降低筒底所受的冲击力. 导流锥母线越光滑, 筒底所受到的冲击力就越小; 增加导流锥后, 燃气流动达到稳定状态的时间与无导流锥时所需的时间近似于相等.

英文摘要:

When the missile is launched by concentric canister launcher, the bottom will be affected by additional ejection force depending on the exhaust slit width, reinforcing device configuration, diversion cone configuration and some other factors. An additional ejection force theory formula was developed using the integral form momentum equation. Qualitative analysis and explanation of various factors on additional ejection force were also conducted. Numerical simulation technology was used to verify the theoretical analysis. The study results show that there is a positive correlation between the force on tube bottom and the additional ejection force. The additional ejection force can be enhanced by decreasing the gap between two concentric canisters. The force on tube bottom will be decreased when diversion cone is installed. Smoother generatrix of diversion cone means smaller force on the tube bottom. The same amount time is needed for exhausts to reach steady state whether there is a diversion cone.

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