

Accepted Manuscript

Numerical simulation and optimized design of cased telescoped ammunition interior ballistic

Jiagang Wang, Yonggang Yu, Liangliang Zhou, Rui Ye



PII: S2214-9147(17)30220-9

DOI: [10.1016/j.dt.2017.11.006](https://doi.org/10.1016/j.dt.2017.11.006)

Reference: DT 276

To appear in: *Defence Technology*

Received Date: 1 August 2017

Revised Date: 7 November 2017

Accepted Date: 27 November 2017

Please cite this article as: Wang J, Yu Y, Zhou L, Ye R, Numerical simulation and optimized design of cased telescoped ammunition interior ballistic, *Defence Technology* (2017), doi: 10.1016/j.dt.2017.11.006.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Numerical Simulation and Optimized Design of Cased Telescoped Ammunition Interior Ballistic

Jiagang Wang

School of Energy and Power Engineering, Nanjing University of Science and Technology, Nanjing 210094, China

Chongqing Wangjiang Industry Co., Ltd, Chongqing 400071, China

410403809@qq.com

corresponding author: Yonggang Yu

School of Energy and Power Engineering, Nanjing University of Science and Technology, Nanjing 210094, China

yygnjust801@163.com

Liangliang Zhou

School of Energy and Power Engineering, Nanjing University of Science and Technology, Nanjing 210094, China

zllnjust@163.com

Rui Ye

School of Energy and Power Engineering, Nanjing University of Science and Technology, Nanjing 210094, China

yearutch@163.com

Abstract: In order to achieve the optimized design of a cased telescoped ammunition (CTA) interior ballistic design, a genetic algorithm was introduced into the optimal design of CTA interior ballistics with coupling the CTA interior ballistic model. Aiming at the interior ballistic characteristics of a CTA gun, the goal of CTA interior ballistic design is to obtain a projectile velocity as large as possible. The optimal design of CTA interior ballistic is carried out using a genetic algorithm by setting peak pressure, changing the chamber volume and gun powder charge density. A numerical simulation of interior ballistics based on a 35mm CTA firing experimental scheme was conducted and then the genetic algorithm was used for numerical optimization. The projectile muzzle velocity of the optimized scheme is increased from 1168m/s for the initial experimental scheme to 1182m/s. Then four optimization schemes were obtained with several independent optimization processes. The schemes were compared with each other and the difference between these schemes is small. The peak pressure and muzzle velocity of these schemes are almost the same. The result shows that the genetic algorithm is effective in the optimal design of the CTA interior ballistics. This work will be lay the foundation for further CTA interior ballistic design.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات