

军用系统分析

基于MCMC的导弹主动段突防仿真及灵敏度分析

齐照辉, 刘雪梅, 梁伟

(航天飞行器生存技术与效能评估实验室, 北京 100085)

摘要:

能否对抗预警卫星的早期预警探测是弹道导弹主动段突防的关键。结合导弹主动段飞行仿真、主动段红外特性计算和预警卫星红外探测仿真, 基于马尔可夫链蒙特卡洛(Markov chain Monte Carlo, MCMC)方法构建了导弹主动段突防仿真模型, 并建立了导弹主动段突防参数灵敏度分析的响应面近似函数模型。通过导弹主动段突防仿真与参数分析算例, 定量给出了导弹主动段性能参数对其突防能力的影响, 验证了方法的有效性。

关键词: 弹道导弹 主动段 突防能力 马尔可夫链 近似函数

Survival simulation and sensitivity analysis of ballistic missile in boost phase based on MCMC

QI Zhao-hui, LIU Xue-mei, LIANG Wei

(The Inst. of Effectiveness Evaluation of Flying Vehicle, Beijing 100085, China)

Abstract:

The anti-detection ability of ballistic missile confronted with warning satellite is critical to its survivability in boost phase. Combined the boost movement model and radiant intensity model of ballistic missile, along with infrared detection model of warning satellite, the Markov chain Monte Carlo (MCMC) algorithm of boost-phase survivability of ballistic missile is established. In addition, the response-surface approximate function is established to analyze the uncertain influence parameters in boost phase. A calculation case is provided, some uncertain parameters are analyzed, and the results show that the algorithm can obtain the survivability of ballistic missile in boost phase.

Keywords: ballistic missile boost phase survivability Markov chain approximate function

收稿日期 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者:

作者简介:

作者Email: E-mail: qzhwy2000@sina.com

参考文献:

本刊中的类似文章

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(OKB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 弹道导弹
- ▶ 主动段
- ▶ 突防能力
- ▶ 马尔可夫链
- ▶ 近似函数

本文作者相关文章

PubMed