

软件、算法与仿真

基于修正权值混合验后的导弹精度融合评估

闫志强^{1,2}, 蒋英杰¹, 宫二玲¹, 谢红卫¹

1. 国防科学技术大学机电工程与自动化学院, 湖南 长沙 410073;
2. 二炮装备研究院, 北京 100085

摘要:

当利用仿真实验和飞行试验两类信息进行导弹精度融合评估时, 对于正态分布参数, 如果将有信息验前分布与无信息验前分布进行混合, 将导致混合验后分布权重无法真实反映两类数据的相容性水平, 从而导致估计结果产生偏差。针对这一问题, 提出了飞行试验样本所对应的有验前样本容量约束的第二类极大似然 (prior sample size constrained maximum likelihood II, SCML II) 估计, 定义了有验前样本容量约束的边际密度 (prior sample size constrained marginal density, SCMD) 函数值。采用现场样本的SCMD替换无信息验前分布条件下的现场样本边际分布, 从而修改了加权混合验后分布的融合权重。最后, 通过实例分析了改进方法的估计性能。

关键词: 精度分析 混合验后分布 仿真可信度 融合评估 第二类极大似然

Synthetic evaluation of missile precision based on mixed posteriors with modified weights

YAN Zhi-qiang^{1,2}, JIANG Ying-jie¹, GONG Er-ling¹, XIE Hong-wei¹

1. College of Mechatronics Engineering and Automation, National University of Defense Technology, Changsha 410073, China;
2. Equipment Academy, The Second Artillery Force of the PLA, Beijing 100085, China

Abstract:

In the case of missile precision synthetic evaluation by the information of simulation test data and fly test data, for the normal distribution parameters, the informative prior is usually mixed with non informative prior, and the mixed posteriors weights can not reflect the consistency of the two sorts of data, which brings inaccurate results. In view of this, a prior sample size constrained maximum likelihood II (SCML II) estimation is presented, and a prior sample size constrained marginal density (SCMD) is defined. The marginal of the field sample upon non informative prior is replaced by the SCMD of the field sample, which brings the modification of weights of mixed posteriors. Finally, the estimation performance of the modified method is analyzed by an example.

Keywords: precision analysis mixed posterior distribution simulation credibility synthetic evaluation maximum likelihood II (ML II)

收稿日期 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1001-506X.2011.03.48

基金项目:

通讯作者:

作者简介:

作者Email:

参考文献:

本刊中的类似文章

1. 梁立波, 罗亚中, 杏建军, 唐国金. 基于协方差分析描述函数法的非线性交会精度分析[J]. 系统工程与电子技术, 2010,32(9): 1977-1981
2. 黄知涛, 周一宇, 姜文利. 基于外辐射源信号的时差定位系统定位精度分析[J]. 系统工程与电子技术, 2010,32(11): 2257-2262

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

▶ 精度分析

▶ 混合验后分布

▶ 仿真可信度

▶ 融合评估

▶ 第二类极大似然

本文作者相关文章

PubMed