电子与信息学报
JOURNAL OF ELECTRONICS & INFORMATION TECHNOLOGY

电子与信息学报 » 2011, Vol. 33 » Issue (10) :2413-2419 DOI: 10.3724/SP.J.1146.2011.00120

基于微多普勒的圆锥弹头进动与结构参数估计

邹小海* 艾小锋 李永祯 赵锋 肖顺平*

国防科技大学电子科学与工程学院 长沙 410073

Precession and Structural Parameter Estimation of the Cone-shaped Warhead Based on the Micro-Doppler

Zou Xiao-hai Ai Xiao-feng Li Yong-zhen Zhao Feng Xiao Shun-ping*

School of Electronic Science and Engineering, National University of Defense Technology, Changsha 410073, China

摘要 参考文献 相关文章

Download: PDF (835KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 微动特征是弹道中段目标雷达识别的有效特征之一。该文首先推导了圆锥弹头的锥顶散射中心和锥底平面上两个滑动散射中心的微多普勒表达式，与由几何绕射理论得到微多普勒时频曲线进行对比，发现锥顶散射中心的微多普勒时频曲线有细小差异，其他两个散射中心的很吻合。通过分析这3个表达式发现3个散射中心的微多普勒具有3种相关性。针对这3种相关性论文提出了在不同入射角下提取微多普勒时频曲线的离散点进行进动和结构参数估计的方法，并进行了仿真实验提取了进动和结构6个参数，且估计效果较好。

关键词： 雷达目标识别 几何绕射理论 滑动散射中心 微多普勒 参数估计

Abstract： Micro-motion feature is one of the effective features used for radar target recognition in the middle section of the ballistic curve. The micro-Doppler expressions of the scattering center at the conical point and two sliding scattering centers in the conical bottom are derived, firstly. The micro-Doppler of the scattering center at the conical point calculated by its micro-Doppler expression is little different to that which is getting by the Geometrical Theory of Diffraction (GTD). The other two scattering center’s micro-Doppler achieved by the two methods coincide with each other. Three correlations of the micro-Doppler of the three scattering centers are founded by analyzing their micro-Doppler expressions. Then a method of precession and structural parameter estimation is proposed by using the magnitudes of the micro-Doppler at some times，which can obtain from the time-frequency analysis. Using the method to extract six precession and structural parameters in different angles of incidence is analyzed, and the simulated results validate the effectiveness of the proposed method.

Keywords： Radar target recognition Geometrical Theory of Diffraction (GTD) Sliding scattering center Micro-Doppler Parameter estimation

Received 2011-02-17;

通讯作者: 邹小海 Email: zouxiaohai2000@sina.com.cn

引用本文:

邹小海, 艾小锋, 李永祯, 赵锋, 肖顺平.基于微多普勒的圆锥弹头进动与结构参数估计[J] 电子与信息学报, 2011,V33(10): 2413-2419

Zou Xiao-Hai, Ai Xiao-Feng, Li Yong-Zhen, Zhao Feng, Xiao Shun-Ping.Precession and Structural Parameter Estimation of the Cone-shaped Warhead Based on the Micro-Doppler[J] , 2011,V33(10): 2413-2419

链接本文:

http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2011.00120 **或** http://jeit.ie.ac.cn/CN/Y2011/V33/I10/2413

Service

把本文推荐给朋友

加入我的书架

加入引用管理器

Email Alert

RSS

作者相关文章

邹小海

艾小锋

李永祯

赵锋

肖顺平