

论文

## 基于IPPS的微弱信号检测

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摘要

该文针对窄带极化雷达系统,研究了微弱信号的检测问题。首先给出了目标散射信号和随机极化波的瞬态极化投影序列(IPPS)表征方法,导出了随机极化波的IPPS到期望点广义距离的统计特性。在此基础上,利用信号和噪声的IPPS到期望点广义距离之间的差异,基于极化积累的思想,提出了一种基于IPPS的微弱信号检测算法,仿真结果表明该文算法可以实现10dB以上的性能改善。

关键词 [雷达](#) [微弱信号检测](#) [瞬态极化](#)

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## A Novel Detection Algorithm of Dim Signal Based on IPPS

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Abstract

The detection problem of dim signal is studied based on mono-frequency or narrowband dual-polarization radar system in this paper. Firstly, the descriptions of Instantaneous Polarization Projection Sequences (IPPS) of signal and noise are presented and statistics of generalized distance between random EM wave and the anticipant signal are derived. Then, utilizing the generalized distance difference of signal and noise to the anticipant signal, a novel detection algorithm is presented through polarization accumulation. In this paper, detect performance of radar system is improved obviously and more than 10dB.

Key words [Radar](#) [Dim signal detection](#) [Instantaneous polarization](#)

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