

网络、通信、安全

一种低信噪比下DSSS的载频估计方法

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摘要 直接序列扩频信号具有较低的功率谱密度, 信号淹没在背景噪声中, 侦查难度较大。四阶累计量2-D切片理论上可以有效地抑制高斯白噪声, 但是当信噪比较低时, 抑制效果不是很明显。对低信噪比下直接序列扩频信号的检测和估计提出了一种改进思路: 在常规四阶累积量2-D切片前加设自适应干扰消噪器。此方法能改善白噪声背景下信号的信噪比。在此思想上基于System View平台构建了仿真模型, 实现了低信噪比下DSSS信号载波频率的准确检测。仿真结果验证了其有效性。

关键词 [直接序列扩频](#) [自适应干扰消噪](#) [四阶累积量](#) [载频估计](#)

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New method of carrier frequency estimation for DSSS based on low SNR

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Abstract

Due to its low power spectral density, the direct sequence spread spectrum signal is always submerged with the background noise, so that it is difficult to reconnoiter the signal. Although the 2-D slice of the fourth-order cumulant can effectively suppress the Gaussian white noise in the abstract, the effect isn't good when SNR (Signal to Noise Ratio) is lower. An improved estimation method for the carrier frequency of Direct Sequence Spread Spectrum (DSSS) is proposed. An adaptive noise cancellation is added in advance of usual fourth-order cumulant 2-D slice, so that SNR is improved under the background of Gaussian white noise. According to the idea, this paper constructs a module based on the system view software and realizes the accurate estimation of carrier frequency for DSSS under low SNR. The validity of this method is shown by computer simulation.

Key words [direct sequence spread spectrum](#) [adaptive noise cancellation](#) [fourth-order cumulant](#) [carrier frequency estimation](#)

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