西安电子科技大学学报 2013, 40(2) 98-102+122 DOI: 10.3969/j.issn.1001-2400.2013.02.016 ISSN: 1001-2400 CN: 61-1076/TN

研究论文

一种用于弱信号检测的广义Keystone变换算法

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摘要：

针对微弱信号在长时间相干积累检测过程中，当用Keystone变换校正回波越距离单元走动时，存在相干积累的结果与选取的基准对齐脉冲有关的问题，提出了一种广义的Keystone变换算法. 首先寻找数字脉冲压缩过程中离散时间采样误差最小的脉冲，然后以此脉冲为对齐基准，利用Keystone变换将所有脉冲回波校正到同一距离分辨单元，从而保证了相干积累结果取得最大值.

关键词： 微弱信号检测 长时间相干积累 越距离单元走动 广义Keystone变换 离散时间采样误差

Generalized Keystone transform algorithm for dim moving target detection

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Abstract:

Aimed at the problem that the accumulation result varies with the choice of the benchmark pulse used in the Keystone transform to correct range migration, a generalized Keystone transform algorithm is proposed for detecting the dim moving target via long-term coherent integration. The algorithm first searches for the minimum error of discrete time sampling and the corresponding pulse from digital pulse compression. Afterwards, this pulse echo is used as the benchmark in the Keystone transform, by which all the pulse echoes are corrected into the same range resolution cell. Accordingly, the maximum output after accumulation is obtained. Computer simulation and real data processing results are given to verify the effectiveness of the proposed method.

Keywords: dim target detection long-term coherent integration range migration generalized Keystone transform discrete time sampling error

收稿日期 2011-11-18 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1001-2400.2013.02.016

基金项目:

航空科学基金资助项目(20090181007)

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