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FAST RADON-FOURIER TRANSFORM FOR RADAR TARGET DETECTION

Abstract

Radon-Fourier transform (RFT) is a method of long time coherent integration of radar target energy in range-time domain via joint searching along range and velocity directions, as well as coherently integration via Doppler filter. In order to reduce its high computation cost, a fast RFT algorithm, which masterly implements RFT in frequency domain by fast Chirp-Z transform, is proposed. The proposed algorithm not only solves the computation cost problem, but also promotes the detection performance of RFT which is realized in time domain without interpolation. The experimental results demonstrate its validity.