

Linear Frequency Modulation-Frequency Shift Keying Radar with Compressive Sensing

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Abstract : In this paper, a radar signal processing technique using the LFM-FSK (Linear Frequency Modulation-Frequency Shift Keying) is proposed for reducing the false alarm rate based on the compressive sensing. The LFM-FSK method combines FMCW (Frequency Modulation Continuous Wave) signal with FSK (Frequency Shift Keying). This shows an advantage which can suppress the ghost phenomenon without the complicated CFAR (Constant False Alarm Rate) algorithm. Moreover, the parametric sparse algorithm applying the compressive sensing that restores signals efficiently with respect to the incomplete data samples is also integrated, leading to reducing the burden of ADC in the receiver of radars. 24 GHz FMCW signal is applied and tested in the real environment with FSK modulated data for verifying the proposed algorithm along with the compressive sensing.

Keywords : compressive sensing, LFM-FSK radar, radar signal processing, sparse algorithm

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