

Off-Grid Sparse Inverse Synthetic Aperture Imaging by Basis Shift Algorithm

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Abstract : In this paper, a new and robust algorithm is proposed to achieve high resolution for inverse synthetic aperture radar (ISAR) imaging in the compressive sensing (CS) framework. Traditional CS based methods have to assume that unknown scatters exactly lie on the pre-divided grids; otherwise, their reconstruction performance dropped significantly. In this processing algorithm, several basis shifts are utilized to achieve the same effect as grid refinement does. The detailed implementation of the basis shift algorithm is presented in this paper. From the simulation we can see that using the basis shift algorithm, imaging precision can be improved. The effectiveness and feasibility of the proposed method are investigated by the simulation results.

Keywords : ISAR imaging, sparse reconstruction, off-grid, basis shift

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