

Adaptive Target Detection of High-Range-Resolution Radar in Non-Gaussian Clutter

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Abstract : In non-Gaussian clutter of a spherically invariant random vector, in the cases that a certain estimated covariance matrix could become singular, the adaptive target detection of high-range-resolution radar is addressed. Firstly, the restricted maximum likelihood (RML) estimates of unknown covariance matrix and scatterer amplitudes are derived for non-Gaussian clutter. And then the RML estimate of texture is obtained. Finally, a novel detector is devised. It is showed that, without secondary data, the proposed detector outperforms the existing Kelly binary integrator.

Keywords : non-Gaussian clutter, covariance matrix estimation, target detection, maximum likelihood

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