

## **A new Air Target Parameters Estimation under Jamming and Clutter Effect Based on SOKT/IFrRT in Airborne Radar**

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The airborne radar is used mainly to detect the ground moving targets, but in case of detecting high speed air target the range migration and Doppler ambiguity estimation will happen in the process of targets parameters estimation, these problems occurs due to the high relative speed between the targets and the airborne radar specially in the presence of jamming and clutter effects that will be more heavily in case of using airborne radar than using ground radars, this paper proposes a new parameter estimation method for compensation of the range migration and Doppler ambiguity estimation based on Optimum Space Time Adaptive Processing (OSTAP), Second Order Keystone Transform (SOKT), and the Improved Fraction Radon Fourier Transform (IFrRT).

The OSTAP will be applied to suppress jamming and clutter, and SOKT/IFrRT will be used for range migration and Doppler ambiguity compensation, Recently (Renbiao Wu, Qiongqiong Jia, and Hai Li, ICSP Proc. 2160-2163, 2010), but they didn't consider the effects of jamming and clutter, and ( Qiongqiong Jia, Renbiao Wu, and Hai Li, ICSP Proc. 2164-2167, 2010) they studied the effect of STAP on Keystone Transform neglecting the Doppler ambiguity estimation error, our proposed model proposes a new hybrid technique using OSTAP/SOKT/IFrRT to estimate the target range with minimum error and overcoming the problems of range migration estimation, and Doppler ambiguity estimation, under the jamming and clutter effect to meet the real environment of the high speed air targets.

We are going to present our simulation results for a monostatic airborne radar based on hybrid OSTAP/SOKT/IFrRT to detect one air moving target with high speed under the ground clutter, and the jamming effect, we have successfully detected the target after removing the clutter and jamming effect, and the range of the target was estimated with minimum RMS error, after applying the proposed algorithm, also the radar probability of detection was compared with the probability of detection of the radar with the previous methods the shows that the proposed technique has a high probability of detection, and hence increasing the radar receiver performance.