

Abstract :

The performance of distributed adaptive clutter map constant false alarm rate (CMAP-CFAR) detection system using fuzzy fusion rules with homogeneous and non-homogeneous background is considered in this paper. We assume that the sensors are identical and the target is fluctuating according to Swerling I model embedded in a white Gaussian noise with unknown variance. Each detector computes the value of the membership function to the false alarm space from the previous samples of the cell under test and transmits it to the fusion center. These values are combined according to fuzzy fusion rules to produce a global membership function to the false alarm space. The obtained results showed that the best performance was obtained while using the “algebraic product” fuzzy rule and the probability of detection increases significantly with the number of detectors.