

## **Applying Adaptive Estimator to Maneuvering Tracking System**

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### **Abstract**

An approach of tracking multiple maneuvering targets using an adaptive estimator is developed in this paper. With the developed algorithm, the system will improve the tracking accuracy and reliability of radar surveillance. Target maneuvering situations are usually existed in radar tracking systems and the maneuvering will cause severe tracking errors. Therefore accurately detecting and estimating maneuvering status of targets is one essential step in the reduction of tracking errors. In this paper, an equivalent filter bank structure is designed to estimate the status of target maneuvering situations. Moreover, an adaptive procedure is applied in this algorithm to obtain faster response for track filters. In order to achieve the optimal correlation between measurements and the existing targets, a data association technique denoted 1-step conditional maximum likelihood is applied in this system. Based on this approach, we can solve the maneuvering and data association problems simultaneously.

**Key words:** 1-step conditional maximum likelihood; Adaptive procedure;  
Multiple maneuvering targets