Detection and Countermeasures » Active & Passive Radar Detection & Equipment

Wald Sequential Detection with Non-Gaussian Pulsed Radar Data Using the Zakai Equation

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Abstract: The 'optimal' Wald sequential hypothesis test for diffusion signals is presented. The result is a threshold test with explicitly computable thresholds. Five possible schemes for a numerical implementation of the test are given. A comparison of the different implementations and analysis of the detectors performance is done for the radar problem of ship versus **chaff** target discrimination using lognormal and Rayleigh models respectively. Parameter estimation for the lognormal and Rayleigh cases is also studied. Finally, a signal estimation scheme is presented utilizing the conditional expectation of the signal computed from the conditional density of the underlying state, which is the solution to the Zakai equation. Keywords: Detection, Ratio detectors, Optimal discrimination. (jes)

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