

This paper presents a sequential likelihood ratio test (SLRT) detector for spectrum sensing scenarios in cognitive radios (CRs). Similar to other CR detectors, we exploit the structure of the sample covariance matrix of the received signal to achieve detection with minimal information regarding the signal. Unlike the majority of covariance-based CR detectors, the SLRT is a sequential detector that allows for smaller detection delays, which is a prized asset in CR systems. Using methods borrowed from the theory of continuous-time diffusion processes, we derive the statistical properties of the SLRT detector and compare it with an eigenvalue-based sequential detector, which has been presented in previous work for CR systems. The comparison also includes detection scenarios with non-Gaussian noise to illustrate the robustness of the proposed detector in these situations.