

OPTIMUM SEQUENTIAL PROCEDURES FOR DETECTING CHANGES IN PROCESSES

George V. MOUSTAKIDES

*IRISA-INRIA,
Campus de Beaulieu, 35042 Rennes Cedex, France
email: George.Moustakides@inria.fr*

Optimality of the Cumulative Sum (CUSUM) test for the change detection (disorder) problem is considered. We demonstrate the optimality of the CUSUM test for the detection of changes in Ito processes, in a sense similar to Lorden's, but with a criterion that replaces expected detection delays by the corresponding Kullback-Leibler divergence. Existing results show optimality of the CUSUM test only for detecting changes in the constant drift of a Brownian Motion. This work extends the optimality of CUSUM to a considerably more general class of processes and changes.

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