



## Fault Detection Schemes for Discrete-Time Linear Markov Jump Systems

By Jedsada Saijai

Shaker Verlag Mrz 2013, 2013. Buch. Condition: Neu. Neuware - Fault detection (FD) is nowadays accepted as an essential process supervisory unit and widely integrated into advanced automatic systems in order to increase their reliability and safety. Among those advanced automatic systems, there exist systems with random abrupt changes in their dynamic behavior. These special systems are successfully modeled by a so-called Markov jump linear systems (MJLS). This dissertation presents the design of observer-based FD schemes for a discrete-time MJLS, which are subject to random disturbances with normal distribution. The observer-based FD generally consists of two stages called residual generation and residual evaluation. It is known that the residual signal contains needed information about the faults to be detected. However, a decision whether a fault occurs or not is consequently made in the residual evaluation stage, which consists of evaluation function and threshold setting. For this reason, a successful FD strongly depends on a threshold computation with respect to a given residual evaluation function. In this dissertation, a Kalman filter (KF) is designed and used as a residual generator. Without any knowledge of the probability density function (pdf) of generated residual signal before and after fault occurrence, the threshold is...



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