

On the Representation of Actuator Faults Diagnosis and Systems Invertibility

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Abstract : In this work, the main problem considered is the detection and the isolation of the actuator fault. A new formulation of the linear system is generated to obtain the conditions of the actuator fault diagnosis. The proposed method is based on the representation of the actuator as a subsystem connected with the process system in cascade manner. The designed formulation is generated to obtain the conditions of the actuator fault detection and isolation. Detectability conditions are expressed in terms of the invertibility notions. An example and a comparative analysis with the classic formulation illustrate the performances of such approach for simple actuator fault diagnosis by using the linear model of nuclear reactor.

Keywords : actuator fault, Fault detection, left invertibility, nuclear reactor, observability, parameter intervals, system inversion

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