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复杂动态系统的故障检测与诊断

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COMPLEX DYNAMIC SYSTEM FAILURE DETECTION AND DIAGNOSIS

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摘要 提出元件模态转变的单向性假设以替代通常的诊断过程中元件模态不变的假设，指出模型基础诊断方法是适合此类系统的基本诊断方法。由此提出一套用于复杂动态系统故障检诊的综合检诊策略ＩＦＤＤＳ（ＩｎｔｅｇｒａｔｅｄＦａｉｌｕｒｅＤｅｔｅｃｔｉｏｎａｎｄＤｉａｇｎｏｓｉｓＳｔｒａｔｅｇｙ），针对飞控系统开发了其具体的检诊算法

关键词： 动态控制 故障 检测 诊断

Abstract： Firstly, considering the failures' complicated combination modes and temporal characteristics, the authors raise a more practical assumption that the elements' modes can transfer but only from normal to fault at any time to replace the general assumption that the modes are unchanged in a diagnosis process. Moreover, based on this assumption, it is pointed out that the model based diagnosis methods can be used as a general tool for this kind of system, and the diagnosis methods based on fault modes as an additional one. Secondly, based on the above consideration, an integrated failure detection and diagnosis strategy is supposed for a complex dynamic system which has the advantage of both artificial intelligence and mathematic algorithms, and it is also realized for a flight control system.

Keywords： dynamic control failure detection diagnosis

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