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OPTIMAL SENSOR PLACEMENT OF ROTOR-BEARING SYSTEM BASED ON FAULT DIAGNOSABILITY

Abstract

Given the current situation that there is little research on whether the possible fault signals of the rotor-bearing system can be identified and separated when optimizing the sensor arrangement, the transmission path of the vibration signals in the rotor-bearing system is analyzed, the rolling bearing vibration signal model is established, and the fault diagnosability is applied to the optimal sensor arrangement of the rotor-bearing system, and the fault diagnosability evaluation criterion is used as an indicator to evaluate different The optimal sensor arrangement is finally given. The possible fault signals are measured at these sensor nodes, and a fast Fourier transform is performed to obtain the spectrum of the corresponding faults. The kernel density estimation is used to find the density function of the corresponding fault, and then the K-L scatter is used to determine the diagnosability of the fault at each location. The fault diagnosability is used as an evaluation index to determine the optimal solution. The feasibility of the proposed method is verified by a rotor-bearing fault diagnosis test bench.