轉子系統之軸承參數估計

陳俊宏, 林平同

機械工程學系

工學院

chen@chu.edu.tw

摘要

This research presents a new method based on the finite element model for estimating linearized characteristics of bearings in rotor-bearing systems including the flexible shaft, which may be changed stepwise along the axial direction, rigid disks, and linearized bearings. The method is dependent on the information about the shaft elements which connect to the estimated bearing. We discussed two cases：(1) the characteristics of the shaft elements in the vicinity of the supports are known (2) the rigidities of the shaft elements in the vicinity of the supports are unknown, and the other known. Besides, we also considered about the effect of measurement errors on parameter estimation. The main feature of this estimating technique is that it can estimate the eight parameters of bearings simultaneously at one spin speed, and need not measure the external input force. In this research, the finite element model is presented together with parameter estimation of bearings and numerical simulation.

關鍵字：rotor-bearing systems, characteristics of bearings, estimating