

Morton Effect (Xiaomeng Tong)

Thermal induced synchronous rotor instability problem, known as the Morton effect is caused by the journal differential heating in fluid film bearing. The temperature differential across the journal causes a bending moment and generates a thermal bow, which may cause increased vibration and continued growth of the synchronous orbit into a limit cycle. Current research focuses on prediction of Morton effect with high fidelity finite element method, which considers 3D elastic and thermal tilting pad bearing & shaft model. Current Codes can achieve nonlinear transient and frequency analysis with prediction of vibration amplitude and temperature distribution. This project is funded by the Turbomachinery Research Consortium in Texas A&M Univ.

