

# **EXPERIMENTAL STUDY OF AN OVERHUNG ROTOR SYSTEM WITH GYROSCOPIC EFFECTS, AND THE SYSTEM'S RESPONSE TO PARTIAL RUB**

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## **ABSTRACT**

The design of machinery with overhung disk configurations is common in industry and machine design. The experimental investigation presented in this paper focuses on addressing issues of instability of overhung systems with large gyroscopic effects. For example machinery with large overhung disks such as centrifugal impellers, or overhung turbine stages may be considered to be in the scope of this study. The experiments were performed to track the changes of the overhung mode of the system, and to observe the response of the mode to a partial rub excitation. A computer model was then constructed to create a root locus analysis to map out the stability of the overhung mode of the system with changing rotative speed. The computer model and experimental results were correlated to demonstrate an effective technique for stability analysis through the use of the root locus analysis technique.