

Plate Vibration Characteristics for Squeeze Film Levitation

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Outline of presentation:

- **Introduction.**
- **Objectives.**
- **Squeeze film levitation design.**
- **Plate characteristics simulation results.**
- **Experimental setup and tests.**
- **Conclusions and future work.**

Abstract:

Squeeze-Film Levitation of a small object placed on a vibrating plate is investigated for 14 plate designs using simulation. Each plate is excited by an arrangement of four piezoelectric actuators driven by an ac voltage with dc offset. Physical experiments show plate mode shapes and dynamic deformation, plus disk levitation for one of the designs.

Application to Industry

Conventional production line conveyance offers high load capacity and high speed. However, it suffers from wear and consequent dust production, and noise. Non-contact Squeeze-Film Levitation is considered a potentially better solution for applications where it is desirable to convey light objects, of any material without physical contact, thereby reducing risk of damage.