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Comparing Two Non-Contact Squeeze Film Levitation Designs

Authors : Ahmed Almurshedi, Mark Atherton, Mares Cristinel, Tadeusz Stolarski, Masaaki Miyatake

Abstract : Transportation and handling of delicate and lightweight objects is a significant issue in some industries. Two levitation prototype designs, a horn transducer design and surface-mounted piezoelectric actuator vibrating plate design, are compared. Both designs are based on the method of squeeze-film levitation (SFL) and the aim of this study is to evaluate the characteristics and performance of each. To this end, physical experiments are conducted and are demonstrated that the horn-type transducer prototype design produces better levitation performance but it design complexity and operating characteristics make it less suitable than the vibrating plate design for practical applications.

Keywords : floating, levitation, piezoelectric, squeeze-film, transducer
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