סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ג'
17.04.2018 (ב' באייר, תשע"ח), בניין דן קאהן, אודיטוריום 1, 13:30.

מרצה :	עידן שדמי
מנחה :	פרופ' יצחק בוכר

על הנושא:

Acoustically levitated bearing system and a nonlinear amplifier concept

The seminar will be given in Hebrew

תקציר ההרצאה :

In this seminar an active acoustic bearing, which employs near-field acoustic levitation, capable of holding a sliding part 'in the air' with no mechanical contact is presented. By creating sufficiently large high frequency vibrations, a thin layer of air generates an elevated pressure, capable of supporting a levitated structure is formed.

This application enables an axial translation for light weighted objects (up to 8.7Kg and potentially more) parallel to the air-gap which find use in clean room applications. This device virtually eliminates sliding friction and contamination at the expanse of being less stiff than a ball-bearing. The stiffness of the air-layer was experimentally estimated on a manufactured model with good success.

In order to enhance the ability to produce acoustic levitation, an improved mechanical amplifier, utilizing parametrically excited electromechanical device, is put forward.

The new amplifier is presented as a dual actuated beam driven by both a bending moment and an axial force, operating at different frequencies – primary and 2:1 parametric excitations of the beam first mode shape, respectively. These actuations are phase shifted with respect to each other and this shift is studied in this research. The simulated model presents an amplification of a small displacement at its ends to a larger one at its center. The model and performance of a validation attempt via finite elements model will be presented.

בברכה,

פרופ"א אמיר סלאו
מרכז הסמינרים