הטכניון – מכון טכנולוגי לישראל **הפקולטה להנדסת מכונות**

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 7.04.16 (כח' באדר ב', תשע"ו), בבניין דן-קאהן, קומה 0, אודיטוריום 1, 14:30.

יוצא: בן פרקש

מנחה: פרופ' יצחק בוכר
מנחים שותפים: דר' הראל פלאט ודר' רן גבאי

על הנושא:

Switching between Buckling Modes using Dynamic Excitation

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

The research deals with a mechanism able to move between buckled states under the influence of periodic axial excitations. Specifically, the mechanism can produce a traveling wave-like deformation sequence that is essential for miniature swimmers. The amplitude of the reciprocal motion produced by the mechanism can be much larger than a resonating, elastic device as it depends on the design of buckled states. This mechanism has 2 stable symmetric buckling modes and 2 unstable symmetric buckling modes. When tuned to produce traveling waves, it traces a circular orbit on the potential map such that the mechanism generates a motion resembling a traveling wave. The geometry controlling the shape of the potential surface is tunable by the system's buckling preload which enables larger amplitudes and deeper potential wells when increased. An analytical and numerical simulations will be shown and compared with an experimental apparatus. An effort to reduce the periodic load that produces the repetitive bouncing from and to potential wells was proved successful. This is demonstrated by the calibrated analytical and numerical models as well as by the digitally controlled experiment.

Having such complex dynamics, the mechanism is sensitive to various boundary conditions, imperfect asymmetry, excitation frequencies and amplitudes. The latter will be demonstrated by a serious of experiments showing perfect periodic motion, period doubling and other types of motions.

בברכה,

שרון אמיר

מרכז הסמינרים