

## סמינריון

הנדך מוזמנת להרצאה סמינריונית של הפקולטה להנדסת מכונות שתתקיים ביום ה' 11.03.21

(כ"ז באדר, תשפ"א), בשעה 13:45 באמצעות הזום :

<https://technion.zoom.us/j/98860030469>

מרצה : סיון לוי

מנחה : פרופ' דוד אילתה

על הנושא :

# **MEMS bulk resonators with optimized geometries for mode-matching and mode-ordering**

The seminar will be given in Hebrew

תקציר ההרצאה :

Resonators are an essential building block in sensors, oscillators and filters. Traditionally, microscale resonators have been implemented in electronic circuits, but recently MEMS resonators are becoming increasingly prevalent, due to their higher quality-factor and superior performance.

In this research we study various types of bulk-mode resonators, in which a single deformable structure provides both inertia and stiffness. MEMS resonators are most often fabricated from (100) single crystalline silicon (SCS), which is an anisotropic material. Due to this anisotropy, modes which are degenerate in isotropic materials become distinctively different. We show two possible design strategies to overcome this problem in SCS structures.

We present the design, simulations and experimental results of disc resonators that are driven and sensed by small piezoelectric patches. These patches are designed with consideration of loss mechanisms and transduction efficiency.

For different reasons it is preferable that a resonator be operated at its lowest natural frequency. In many structures, the order of frequencies of different modes are coupled to the mode-shape. In this work we investigated the possibility of using geometry to reorder the frequencies of the different modes.

בברכה,

שפ"א את' אא

מרכז הסמינרים