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

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 12.01.17 (יד' בטבת, תשע"ז), בניין דן-קאהן, קומה 0, אודיטוריום 1 , 14:30.

תרצה: חן וינר

מנחה: פרופ"מ שלי צליל

על הנושא:

דינמיקה וסינכרון של פעימות תאי לב מצומדים מכנית

Dynamics and Synchronization of Mechanically-Coupled Beating Cardiomyocytes

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

Cell-cell communication enables cells to coordinate their activity and is essential for growth, development and function. Intercellular communication is discussed almost exclusively as having a chemical or an electrical origin. However, the ability of cells to exert forces and respond to mechanical deformations allows a cell to detect and respond to substrate strains created by its neighbors. A recent study conducted in our group has demonstrated that elastic interaction, mediated by cell-generated mechanical deformations, can act as a long-range interaction force between cells.

In my talk I will discuss the steady state dynamics of pairs of mechanically-coupled cardiomyocytes. Cardiomyocytes can be regarded as stochastic-living oscillators that tune their internal parameters and intrinsic noise as a result of mechanical coupling. We use micropatterning techniques in order to control cell-cell relative orientation and distance on the underlying elastic substrate. We show that the beat-to-beat variability decreases exponentially with the strength of mechanical coupling. Furthermore, we demonstrate that while electrical pacemaker can synchronize cardiomyocyte beating frequency, mechanical communication is essential to synchronize cardiomyocyte beating phase.

בברכה,

פרופ"א שמואל אוסובסקי

מרכז הסמינרים