

קורס בחירה לפיסיקה תואר ראשון ושני
Course for undergrad & grad Physics students

תורת הרצף

CONTINUUM THEORY

0321.3119

פרופ' יעקב קנטור Prof. Yacov Kantor

תש"פ סמסטר א' 3 ש"ש (שעור ותרגיל)

2019/20 1st semester 3hrs/wk (lecture+recitation)

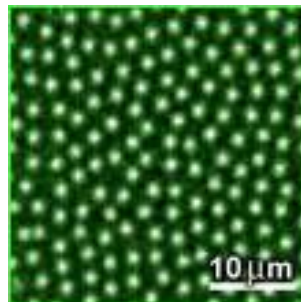
יום ב' 15:00-18:00

סילבוס Syllabus

1. Continuum theories in Physics.
2. Dimensional analysis and dynamical similarity.
3. Elementary concepts: stress, strain, flow lines, Eulerian and Lagrangian approaches, Reynolds transport theorem and mass conservation, momentum conservation.
4. Constitutive equations, simple flows, vortices, Kelvin's theorem, Bernoulli's theorem, potential flow, Blasius theorem, Kutta-Joukowski law. Navier-Stokes equation.
5. Waves: surface waves, small amplitude waves, Kelvin's wedge, sound waves.
6. Finite amplitude waves, 1D gas dynamics, shock waves.
7. Solitons, Korteweg – de Vries equation.
8. Special topics: viscous fingering, vortices in superconductors.



Vortices



Wakes
(Kelvin's wedge)

