



The Hebrew University of Jerusalem

Syllabus

SUPERFLUIDITY AND QUANTIZED VORTICES - 77566

Last update 18-08-2016

HU Credits: 2

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: physics

Academic year: 0

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Pr. William Glaberson

Coordinator Email: glabersn@vms.huji.ac.il

Coordinator Office Hours: By appointment

Teaching Staff:

Prof William Glaberson

Course/Module description:

A seminar class in superfluidity.

Course/Module aims:

See learning outcomes

Learning outcomes - On successful completion of this module, students should be able to:

Learn a topic on his/her own and present it to the class.

Attendance requirements(%):

75

Teaching arrangement and method of instruction: Seminar

Course/Module Content:

Refrigeration techniques - adiabatic demagnetization, Pomeranchuk effect, dilution refrigeration, laser cooling. Superfluid phenomenology - fountain effect, two-fluid model, sound in superfluid, Bose-Einstein condensation. Vorticity - quantized hydrodynamics, vortex lines and rings, vortex-ion interaction, critical velocity. Vortex waves - Kelvin waves, Tkachenko waves, vortex lattice. Superfluidity in two dimensions. Other superfluids - superconductivity, superfluid He3, neutron stars, dilute Bose gases.

Required Reading:

None

Additional Reading Material:

The material will be specified at the beginning of the course.

Course/Module evaluation:

End of year written/oral examination 0 %

Presentation 100 %

Participation in Tutorials 0 %

Project work 0 %

Assignments 0 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information:
None