Level: PhD

Course title: Theory of superconductivity

Status: elective

ECTS: 15

Requirements: none

Learning objectives

Bearing in mind that phenomenon of superconductivity introduced revolutionary view in science and technology and that there is no satisfying theory describing all of its aspects, there is a strong need that known theoretical approaches in this area become available to students on PhD studies of physics. The goal of this course is to introduce students with possible mechanisms of high Tc superconductivity through the most significant theoretical approaches for description of this macroscopic quantum phenomenon and with new types of superconductors.

Learning outcomes

After finishing this course, students should be familiar with theoretical approaches used for the explanation of high Tc superconductivity. Students should also be able to track and analyse literature in this area. They are also encouraged to apply research in this field applying knowledge gained in this course.

Syllabus

Theoretical instruction

Superconductivity: the effects and properties of superconductive materials. Phenomenological theory of the superconducting state. BCS mechanism of superconductivity. High-temperature superconductivity; models and results. The new superconductors.

Practical instruction

Solving practical problems related to this area of science.

Weekly teaching load				Other:
Lectures: 6	Exercises:	Other forms of teaching:	Student research: 4	