NEW YORK CITY COLLEGE OF TECHNOLOGY
Physics Department
Seminar in Theoretical Physics

Bose-Einstein Condensation of Trapped Polaritons in a Microcavity in a High Magnetic Field

Presented by:

Prof. Oleg L. Berman

New York City College of Technology

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Abstract

The Bose-Einstein condensation (BEC) of magnetoexcitonic polaritons (*magnetopolaritons*) in a two-dimensional (2D) electron-hole system embedded in a semiconductor microcavity in a high magnetic field B is predicted. There are two physical realizations of the 2D electron-hole system under consideration: a graphene layer and a quantum well (QW). A 2D gas of magnetopolaritons is considered in a planar harmonic potential trap. Two possible physical realizations of this trapping potential are assumed: inhomogeneous local stress or harmonic electric field potential applied to excitons and a parabolic shape of the semiconductor cavity causing the trapping of microcavity photons. The effective Hamiltonian of the ideal gas of cavity polaritons in a QW and graphene in a high magnetic field and the BEC temperature as functions of magnetic field are obtained.