ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ

ΤΜΗΜΑ ΦΥΣΙΚΗΣ

ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

PHYSICS COLLOQUIUM

Thursday, 16 October 2008
17:00-18:00

3rd Floor Seminar Room

"Novel ultra-efficient polariton light-emitting devices"

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ABSTRACT:

The increasing ability to control light–matter interactions at the nanometre scale has improved the performance of semiconductor lasers in the past decade. The ultimate optimization is realized in semiconductor microcavities, in which strong coupling between quantum-well excitons and cavity photons gives rise to hybridhalf-light/half-matter polariton quasiparticles. The unique properties of polaritons such as stimulated scattering, parametric amplification, lasing and superfluidity are believed to provide the basis for the development of a new generation of polaritons emitters and novel forms of lasing in semiconductors. In this talk, I will review recent progress in the development of new generation of electrically pumped polariton light emitting devices and discuss the recent progress on polariton LEDs operating at room temperature as well as polariton amplification at elevated temperatures.

[1] Tsintzos S.I. et al., Nature 453, 372-375, 2008.

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