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Dated: 06 January 2010

TPSC SEMINAR NOTICE

SPEAKER: Dr. Ranber Singh
Max-Planck-Institute für Festkörperforschung
Heisenbergstrasse 1, Stuttgart, Germany.

TITLE: Semiconductor quantum dots as a source of *on demand* single photons and entangled photon pairs

DATE & DAY: 7th January 2010, Thursday
VENUE: Seminar Hall
TIME: 4.00 P.M.

Abstract:

In the emerging fields of quantum teleportation, quantum cryptography and quantum computations the hot research topic is the generation and manipulation of single photons and entangled photon pairs. The semiconductor quantum dots (QDs) are the central part of this hot research field. A QD placed inside an optical microcavity enhance the spontaneous emission of photons through the Purcell effect and can be used as an efficient single photon source.. In order to use the QDs as a source of *on demand* single photons and entangled photon pairs, we need to manipulate the QD's photon energy and reduce FSS to zero. The most practical approach to manipulate QD's photon energy and FSS is by applying the uniaxial strain because it does not reduce the oscillator strength of optical transitions. But it is still an open question whether FSS can be tuned through zero by applying uniaxial stress. Another approach to generate entangled photon pairs from biexciton cascade process in a QD is by tuning the binding energy of biexciton to zero. There is also ongoing efforts to search for QD structures which intrinsically have FSS to be zero. In this talk I will address the tuning of QD's Photon energy, FSS and binding energy of biexcitons by applying external strains.

Tea shall be served at 3.45 P.M.

All interested are invited to attend
TPSC convener

Chairman