Sonderforschungsbereich 631

Festkörperbasierte Quanteninformationsverarbeitung

TECHNISCHE UNIVERSITÄT MÜNCHEN

SONDERSEMINAR

Dienstag, 22. Januar 2008

13:15 Uhr

WSI, Seminarraum S 101

“ Nano-spintronics with quantum dots ”

The emerging area of nano-spintronics focuses on developing the means of exploiting spin properties at the nanoscale, with a single electron spin, single magnetic ion spin, and polarization of a single photon as ultimate limits. I will review our recent work on nano-spintronics with gated and self-assembled quantum dots carried out at IMS NRC with focus on two ways of controlling spin: through Pauli exclusion principle and via spin-orbit interaction. Some effects covered include “single spin transistor”, magnetic frustration and topological Hunds rules in quantum dot networks, RKKY spin-spin interactions and SO coupling of spin, angular momentum, and parity in quantum dot molecules.

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