



Sonderforschungsbereich 631
Festkörperbasierte Quanteninformationsverarbeitung



Seminar Announcement

Excitons and spins in semiconductor quantum dots

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In this talk I will discuss magnetic and spin properties of excitons in self-organized quantum dots and rings. A neutral exciton confined to a quantum ring can demonstrate the Aharonov-Bohm effect. This magnetic-interference effect originates from the quantum phases in a polarized exciton and allows us to tailor optical properties of nano-crystals.

Excitons in the voltage-tunable structures with a back contact can strongly interact with the Fermi sea of electrons. If the exciton spin is nonzero, the Kondo effect results in peculiar photoluminescence line shapes. The recent experiments show that it is possible to control the spin flip rate of exciton simply with a dc voltage utilizing the Kondo interactions. And, in the last part of the talk, I will discuss optical properties of coupled quantum dots where individual dots can exchange spin and energy.

J. Finley. (x 12782 / 12344)
