SPIN RELATED PHENOMENA IN TRANSPORT PROPERTIES OF MAGNETC MESOSCOPIC SYSTEMS

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9.7 cm

Spin effects in transport properties of magnetic mesoscopic systems will be reviewed, with particular attention paid to new physical phenomena and their possible applications in magnetoelectronics/spintronics devices. This includes the phenomena which occur when electrons cross an interface between nonmagnetic and ferromagnetic systems, like for instance nonequilibrium spin accumulation, spin injection, and local torque acting on the system. In the latter case, the torque may lead to current-induced magnetization switching. Main emphasis, however, will be on spin polarized transport in double ferromagnetic junctions, including crossover from planar double-barrier junctions to double junctions with a single-level quantum dot as the central part. Owing to the tunnel magnetoresistance effect, such systems may be used in field sensors. Apart from this, they also can operate as magneticaly controlled single electron transistors, diodes, spin injectors, spin polarizers, etc. Some new physical phenomena, like for instance magneto-Coulomb oscillations, spin blockade, and others may also occur in these systems.

13.4 cm

Subject category :
2. Magnetic Films, Surfaces and Multilayers

Presentation mode :
Invited

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