

Spin-dependent magnetotransport in semiconductor nanowires

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The spin-dependent electron transport in semiconductor nanowires is considered in the presence of the external magnetic field directed along the symmetry axis of the nanowires. For this purpose calculations of the spin-dependent magnetotransport characteristics for the nanosystems have been performed within the adiabatic approximation by applying the Landauer-Büttiker formalism. The effect of the geometric inhomogeneity of the nanowire in the presence of the magnetic field on the spin-dependent current-voltage characteristics is considered. The spin current polarization is discussed as a function of the source-drain voltage and the magnetic field applied to the nanosystem.

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