

Abstract Submitted
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Spin transport and spin minibands in a magnetic superlattice: dependence on geometrical and physical parameters¹ NAMMEE KIM, JIN-WOO KIM, HEESANG KIM, Soongsil University — We have studied the spin miniband structure and the ballistic spin-polarized transport through a magnetic superlattice, formed by inhomogeneous magnetic field in a semiconductor nanowire. Based on the transfer matrix theory and the Bloch's theorem, we calculate the energy dispersion having spin miniband and minigap due to Bloch periodicity and spin dependent ballistic conductance for various geometrical and physical parameters. It is shown that full spin polarization in the ballistic conductance of the system occurs clearly for each spin, and that the fully spin polarized range for each spin can be enhanced by modulation of geometrical and physical parameters.

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Namnee Kim
Soongsil University

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