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**Generation of spin polarized current in a semiconductor by an ohmic contact containing ferromagnetic particles**[1] LEONARDO CASTELANO, Department of Physics, University of California, San Diego, YU-CHANG CHEN, Department of Electrophysics, National Chiao Tung University, S.-R. ERIC YANG, Physics Department, Korea University, LU SHAM, Department of Physics, University of California, San Diego — We investigate the possibility of injection of spin polarized current into a semiconductor from an ohmic contact containing ferromagnetic metal (FM) nanodots. The polarization is created by the spin-dependent scattering of the current carriers with the FM dots with aligned magnetizations. The usually inefficient polarization generation due to the resistance mismatch between the metal electrode and the semiconductor is mitigated by the reduction of the mismatch between the FM dots and the heavily doped electrode. When the paramagnetic semiconductor is connected by two such electrodes containing FM dots forming a spin valve system, the magnetoresistance is calculated to be sizable. We report the calculation results for two examples: (i) silicon connected to electrodes of poly-silicon contain the FM dots and (ii) the heavily doped region of InAs as contact.

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