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Lateral Spin Injection in Germanium Nanowires EN-SHAO LIU, JUNGHYO NAH, KAMRAN VARAHRAMYANA, SANJAY BANERJEE, EMANUEL TUTUC, Microelectronics Research Center, University of Texas at Austin — Efficient spin injection from ferromagnetic (FM) contacts into semiconductors (SC) is typically suppressed by the conductivities mismatch between the FM contact and the SC. Spin injection can be achieved however if the contact resistivity at the FM/SC interface is appropriately engineered [1]. Here we report spin injection in n-type, phosphorus-doped germanium nanowires with doping densities above 10^{19} cm^{-3}, using cobalt as FM contacts and MgO tunnel barriers for contact resistance engineering. The two-point magneotresistance measurements of Ge nanowires with Co contacts reveal spin-valve effect, with a low (high) resistance for parallel (antiparallel) polarizations of the FM contacts. Non-local, four-point magnetoresistance measurements, which separate the spin diffusion path from the charge current path, demonstrate that the observed spin-valve effect stems from spin injection in the Ge nanowires. [1] A. Fert and H. Jaffres, Phys. Rev. B. **64**, 184420 (2001)

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