CMTC Condensed Matter Theory Center

NAM center for nanophysics and advanced materials

Condensed Matter Colloquium

Thursday, September 12, 2013

2 pm, Room 1201

Ian Appelbaum

University of Maryland

Anisotropy-driven spin relaxation in germanium

A unique spin depolarization mechanism, induced by the presence of g-factor anisotropy and intervalley scattering, is revealed by spin transport measurements on long-distance germanium devices in a longitudinal magnetic field. The confluence of electron-phonon scattering (leading to Elliott-Yafet spin flips) and this previously unobserved physics enables the extraction of spin lifetime solely from spin-valve measurements, without spin precession, and in a regime of substantial electric-field-generated carrier heating. We find spin lifetimes in Ge up to several hundreds of ns at low temperature, far beyond any other available experimental results.

Pengke Li, Jing Li, Lan Qing, Hanan Dery, Ian Appelbaum, arXiv:1307.4745

Refreshments at 1:30 pm in Room 1305F

physics University of Maryland