



Seminarankündigung

**Dienstag, 10. Juli 2012
17:15 Uhr**

WSI, Seminarraum S 101

“Transverse Thermoelectrics: A new paradigm for nanoscale & cryogenic solid-state refrigeration”

Semiconductors with anisotropic electron and hole dispersions are shown to function as orthogonally ambipolar transverse thermoelectrics (OATT), whereby longitudinal electrical currents drive transverse Peltier heat flow with no external magnetic field. Equations for thermoelectric transport under a two-band electron-hole model yield the optimal orientation for the current and transverse heat flow to achieve maximum transverse figure of merit $Z_{\perp}T$. The type II broken-gap InAs/GaSb superlattice (T2SL) is shown to have the appropriate OATT band structure, and band gaps of order the thermal energy kT are calculated to give competitive $Z_{\perp}T$. Preliminary geometries are proposed for maximal thermal cooling in nanostructures.

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