Abstract Submitted
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Electron distribution among the Γ, L, and X GaAs conduction band valleys in an Fe/GaAs(n) Schottky barrier.[1] STUART HOLMES, J. LALOE, I. FARRER, Toshiba Research Europe Limited, IMRAN KHAN, MESUT YASAR, MANUEL DIAZ-AVILA, ATHOS PETROU, SUNY at Buffalo, TOSHIBA RESEARCH EUROPE LIMITED TEAM, SUNY AT BUFFALO TEAM — The electroluminescence (EL) spectra from Fe/GaAs(n)/InGaAs/GaAs(p) spin-LEDs have a complicated composition. In addition to the $e_1\ell_1$light and e_1h_1 heavy hole excitonic features the band-edge EL contains the following phonon replicas: e_1h_1-TA, $e_1\ell_1 - LO$, $e_1h_1 - LO$, $e_1h_1 - LO - TA$, and $e_1h_1 - LO - LA$. The replicas are interpreted as due to recombination processes that involve electrons occupying the L and X valleys of the GaAs(n) conduction band. The high momentum electrons are promoted to the higher energy L and X valleys by the strong electric field at the Fe/semiconductor interface [1].
[1] S. Saikin et al, J. Phys: Condens.Matter **18**, 1535, (2006)

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Mesut Yasar
SUNY at Buffalo

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