

Abstract Submitted
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Localization and exciton line-width broadening in the dilute nitride, GaNAs DERMOT MCPEAKE, Tyndall National Institute, University College Cork, Ireland, IVANA BOSA, Tyndall National Institute, University College Cork, Ireland, ANDREW LINDSAY, Tyndall National Institute, University College Cork, Ireland, STEPHEN FAHY, Tyndall National Institute and Department of Physics, University College Cork, Ireland, EOIN P. O'REILLY, Tyndall National Institute, University College Cork, Ireland — The connection between carrier mobility and exciton line-width broadening in GaNAs is studied in a one-band, effective mass approach. Exciton energy levels are calculated numerically in a supercell geometry, using the Born-Oppenheimer approximation for the electron-hole wavefunction in the presence of the electron-hole Coulomb interaction and a random alloy potential acting on the electron. Under the assumption of completely random alloying, the variance (per unit volume) of the random potential acting on the electron is inversely proportional to the electron mobility. Results for the electron-hole recombination spectrum are compared to recent experiments.

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