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Exchange-Correlation Effects in the Impurity-Limited Mobility of GaAs Quantum Wires

Bilal TANATAR

Bilkent University, Department of Physics,
06533 Ankara-TURKEY

Abstract: We study the many-body effects described by the local-field corrections on the mobility of quasi-one dimensional electron systems. The low temperature mobility due to remote-impurity doping and interface-roughness scattering is calculated within the relaxation time approximation. We find that correlation effects significantly reduce the mobility at low density.

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