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Abstract

The Motion of Electrons inside Nanostructures†

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Combining theoretical simulations with imaging experiments, one can visualize and understand the flow of electrons through nanoscale semiconductor devices. Quantum diffraction and interference are important, in addition to classical paths. Imaging examples include a one-electron InAs dot formed by InP barriers inside an InAs/InP nanowire, a one-electron GaAs quantum dot formed by gates, the magnetic focusing of electron waves flowing between two quantum point contacts, and the flow of electron waves from a single quantum point contact.

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