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## Transport modeling for Nanowires and Nanotubes

Quasi-onedimensional nanostructures have attracted much interest as they are recognized as promising building blocks for future nanoelectronic devices. A model for electronic transport in these structures has to address various physical effects: Quantum mechanical confinement, tunneling and interference, coupling of the semiconductor region to the contacts (open systems), non-equilibrium conditions (voltage applied to the contacts, irradiation), electron-phonon scattering and electron-photon interaction. The non-equilibrium Green's function (NEGF) technique has proven well suited for the numerical study of such problems. A device simulator based on the NEGF method and a tight-binding model for the band structure has been developed. We present a numerical analysis of the thermoelectric properties of scaled silicon nanowires, and of the opto-electronic response of CNT-based photodetectors.