

Abstract Submitted
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Nonequilibrium Green's function modelling of quantum well solar cells URS AEBERHARD, RUDOLF H. MORF, Condensed Matter Theory, Paul Scherrer Institut — We present a microscopic model of the photocurrent in *GaAs* – *AlGaAs* quantum well solar cells (QWSC), based on the nonequilibrium Green's function formalism (NEGF) for a multiband tight binding Hamiltonian. The quantum kinetic equations of motion are selfconsistently coupled to Poisson's equation. Relaxation and broadening mechanisms are considered by the inclusion of acoustic and optical electron-phonon interaction in a self consistent Born approximation of the scattering selfenergies. The model is applied to different multi-quantum-well systems to investigate the role of device geometry and coupling between the wells.

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