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Non-equilibrium thermoelectric transport in thin film heterostructures[1] MONA ZEBARJADI, ALI SHAKOURI, KEIVAN ESFARJANI, University of California, Santa Cruz — The Monte Carlo technique is used to calculate thermoelectric transport properties across thin-film heterostructures. We study the size and position dependence of the Seebeck coefficient across a thin film InGaAsP barrier layer sandwiched between two InGaAs contact layers. With decreasing size, the effective Seebeck coefficient is increased. The transition between pure ballistic thermionic transport and fully diffusive thermoelectric transport is described. We characterized the non-equilibrium length of the device and deduce the power dissipated to the lattice.

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