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Understanding local heat and electron transport across nano-scale interfaces BHASKARAN MURALIDHARAN, GANG CHEN, Massachusetts Institute of Technology — The issue of local transport properties across nano-interfaces is addressed in this talk. Local thermoelectric transport coefficients are calculated directly from local current distributions using the non-equilibrium Green function (NEGF) technique. A salient feature of our approach is that both thermoelectric (quasi-equilibrium) and thermionic (non-equilibrium) devices are handled on a similar footing. Most importantly, we capture the local variations of Peltier coefficient, chemical potential and power density that depend strongly on the nature and shape of the nano barrier. We point out the non-trivial result that the spatial extent of Peltier cooling and Joule heating near an interfacial region, in the limit of strong scattering depends on the potential profile and shape of the barrier.

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