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Thermal transport in strongly correlated multilayered nanostructures[1] JAMES FREERICKS, Department of Physics, Georgetown University, VELJKO ZLATIC, Institute of Physics, Zagreb, Croatia — The formalism for thermal transport in strongly correlated multilayered nanostructures is developed. We employ inhomogeneous dynamical mean-field theory and the Kubo formula to derive relevant thermal transport coefficients, which take the form of matrices with respect to the planar indices. We show how to define the local versions of the current and heat current operators so that heat-current correlation functions can be easily evaluated via the Jonson-Mahan theorem. Thermal transport in nanostructures is complicated by the fact that the thermal current need not be conserved through the device, and a given experimental set-up determines both how the thermal current can change through the device and how the steady-state temperature profile can be determined. Formulae to analyze classic experiments such as the Peltier and Seebeck effects, the thermal conductivity, and for running a thermoelectric cooler or power generator are also discussed.

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