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Evolution of a Driven Quantum System Toward a Quasi-Thermal State HERBERT F. FOTSO, KARLIS MIKELSONS, JAMES K. FREERICKS, Department of Physics, Georgetown University, DEPARTMENT OF PHYSICS, GEORGETOWN UNIVERISTY TEAM — We study the relaxation of an interacting system driven out of equilibrium by a constant electric field using Non-Equilibrium Dynamical Mean Field Theory. We use on the one hand a DMFT method which solves the steady state problem directly in frequency space, and on the other hand, a DMFT method that follows the transient time evolution of the system on the Keldysh contour. The system is described by the Falicov Kimball model which we follow across the metal - insulator transition. We find that the retarded Green's function quickly approaches that of the steady state while the lesser Green's function and, as a result the distribution function, slowly approach that of a steady state with an increased temperature due to the additional energy transferred to the system by the electric field. Analyses of this type can help understand the results of some experiments involving ultracold atomic gases.

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