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Mapping the Driven Interacting Resonant Level Model to an Equilibrium Problem EDUARDO NOVAIS, M.R. PLESSER, HAROLD U. BARANGER, Duke University — We map the driven Interacting Resonant Level Model (IRLM) to an equivalent statistical mechanical problem. Correlation functions in the nonequilibrium model are given, to all orders in perturbation theory, by thermal averages in the statistical system. This enables us to apply the traditional theoretical techniques for thermal problems, such as the renormalization group and diagrammatic expansions, to a far from equilibrium problem. Using these tools, we study the current as a function of bias, as well as of the interactions in the leads and the resonant level. As a simple example of a strongly interacting system far from equilibrium, the IRLM has played an important role in motivating and evaluating recent theoretical advances. We compare our new strategy to other recent proposals for studying far from equilibrium interacting systems.

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