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Many-body treatment of quantum transport through single molecules JUSTIN BERGFELD, CHARLES STAFFORD, University of Arizona — Electron transport through single molecules represents a natural evolution of *mesoscopic physics* to the ultimate limit of smallness. An important respect in which single-molecule devices differ from mesoscopic systems is that molecules possess *exact spatial symmetries*, which are manifested in their quantum transport properties. In this talk, we investigate the effect of molecular symmetries on multi-terminal quantum transport through single benzene molecules, treating the lead-molecule couplings perturbatively via a Dyson expansion, but including intramolecular correlations exactly using the nonequilibrium Green function approach. It has become increasingly clear that an accurate treatment of intramolecular correlations is necessary to provide a realistic model of electron transport through single molecules, and hence to achieve quantitative agreement with conductance experiments.

Prefer Oral Session
 Prefer Poster Session

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