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Coulomb and Spin Blockade transport through molecules and quantum dots BHASKARAN MURALIDHARAN, Purdue University, OWEN MILLER, University of Virginia, AVIK GHOSH, Univeristy of Virginia, SUPRIYO DATTA, Purdue University — In this talk we address some common theoretical grounds between molecular electronics and quantum-dot transport. Here, we focus on how theoretical models based on Coulomb Blockade (CB) theory can be successfully applied in order to theoretically interpret various notable transport experiments in both molecular electronics and quantum dot transport. We first show that, a majority of low-temperature molecular experiments can be explained easily, using a simplified CB theory. In the later part, we focus on how the many-body excitation spectrum of the molecule/quantum dot plays a significant role, in many other experiments. This includes, not-so-commonly observed transport effects such as Negative Differential Resistance (NDR) and bi-stability, resulting from asymmetry within the molecule or within the quantum dot array.

Bhaskaran Muralidharan
Purdue University

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