

Abstract Submitted  
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**Nanoscale Charge Transport in Realistic Organic Thin-Films:  
Beyond Variable-Range Hopping and Percolation Networks** GEOFFREY  
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WELL, XIALING CHEN, AARON CRANDALL — We are building up experi-  
mental and computational model systems for charge transport in nanoscale organic  
electronic devices. In particular, our combined approach is aimed at addressing  
questions as to the effect of impurities, traps, and other defects on electronic con-  
ductivity. Experimentally, we have designed thin films and monolayers to which we  
can controllably add known quantities of defects with known electronic properties. In  
tandem, we focus on a new Monte Carlo style simulation of charge transport in these  
imperfect devices with an aim to move beyond simple variable-range hopping mod-  
els. Our goal is to establish all parameters for our simulations from first-principles  
calculations and detailed experimental results. I will describe initial results and  
comparisons with other organic electronic materials and existing charge transport  
models.

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