

Abstract Submitted  
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**Franck-Condon Blockade and Giant Fano Factors in Transport Through Single Molecules** FELIX VON OPPEN, JENS KOCH, Freie Univ. Berlin — We show<sup>1</sup> that Franck-Condon physics leads to a significant current suppression at low bias voltages (termed *Franck-Condon blockade*) in transport through single molecules with strong coupling between electronic and vibrational degrees of freedom. We find that transport in this regime is characterized by remarkably large Fano factors ( $10^2$  -  $10^3$  for realistic coupling parameters), which arise due to avalanche-like transport of electrons. Avalanches occur in a self-similar manner over a wide range of time scales, as reflected in power-law dependences of the current noise on frequency and vibrational relaxation rate.

<sup>1</sup> Jens Koch and Felix von Oppen, cond-mat/0409667

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