Molecular Conductors with Center of Mass Motion

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DAGOTTO, Department of Physics, University of Tennessee and ORNL — We
study numerically the linear conductance of a molecular conductor that can oscil-
late between the source and drain electrodes.\textsuperscript{1} This vibrational mode leads to an
asymmetric modulation of the molecule-leads hopping parameters. By expanding
this modulation up to the linear order, the conductance can be decomposed into
two channels, the direct hopping and the phonon-assisted tunneling channels. The
Kondo regime results show conductance dips that can be attributed to the destruc-
tive interference\textsuperscript{2} of these two channels. If an internal vibrational mode is also active
with the effect of symmetric modulation of the tunneling barriers, the particle-hole
symmetry is broken and a Fano-like interference is observed.

\textsuperscript{1} K.A. Al-Hassanieh et al - Preprint