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Novel quantum interference effects in transport through molecular radicals JUSTIN BERGFIELD, Department of Chemistry, Northwestern University, GEMMA SOLOMON, NanoScience Center and Department of Chemistry, University of Copenhagen, CHARLES STAFFORD, Department of Physics, University of Arizona, MARK RATNER, Department of Chemistry, Northwestern University — In molecules with an unpaired electron (radicals), we predict a correlation-induced 'Mott-node' in the transmission spectrum arising from destructive interference between transport contributions from different charge states of the molecule. This class of quantum interference effect has no single-particle analog and cannot be described by effective single-particle theories. Large errors in the thermoelectric properties and nonlinear current-voltage response of molecular radical junctions are introduced when the complementary wave and particle aspects of the electron are not properly treated. A method to accurately calculate the low-energy transport through a radical-based junction using an Anderson model is given.

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