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The number of transmission channels through a buckyball
JARRED HUDSON, MICHAEL STEFFERSON, CHARLES STAFFORD, University of Arizona — Transmission through nanoscale junctions consisting of a single Buckminsterfullerene molecule between two Pt electrodes is investigated in the nonequilibrium Green's function approach within Hueckel theory. Junction ensembles for hexagon-hexagon, hexagon-pentagon, and pentagon-pentagon contacts to the two Pt electrodes are analyzed. We find that the transmission eigenvalue distribution is limited by the degeneracy of the molecular resonance closest to the Pt Fermi level. However, interference effects strongly suppress the contributions of some of the degenerate channels.

Charles Stafford
University of Arizona

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