Abstract Submitted
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Electron Transport through Models for Small-World Nanomaterials[1] LAZARUS SOLOMON, MARK NOVOTNY, Mississippi State University — We investigate the quantum transport of (spinless) electrons through simplified models related to small-world nanomaterials. We employ a tight-binding Hamiltonian, and obtain the transmission coefficient from a matrix solution of the associated time-independent Schrödinger Equation. The system studied corresponds to $d = 1$ semi-infinite input and output leads, connected to a 'blob' of N atoms. We first present exact results for N inter-connected atoms, a fully-connected graph. The exact solution, for any N, is given both for symmetric and non-symmetric connections between the 'blob' and the input/output. We then present numerical results obtained by removing some of the connections within the N-site 'blob', thereby approaching transport through a small-world nanomaterial [1-4].
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[2] M.A. Novotny *et al.*, J. Appl. Phys., **97**, 10B309 (2005).
[3] M.A. Novotny and S.M. Wheeler, Braz. J. Physics **34**, 395 (2004).
[4] J. Yancey, M.A. Novotny, and S.R. Gwaltney, 2008 March Meeting presentation.

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