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Dissipative effects in the electron transport through conducting polymers NATALYA ZIMBOVSKAYA, University of Puerto Rico at Humacao, GRIGORY ZIMBOVSKIY, Urals State Minig University — Here, we study the effects of stochastic nuclear motions on the electron transport in doped polymer fibers assuming the conducting state of the material. We treat conducting polymers as granular metals and apply the quantum theory of conduction in mesoscopic systems to describe the electron transport between the metalliclike granules. To analyze the effects of nuclear motions we mimic them by the phonon bath, and we include the electron-phonon interactions in consideration. Our results show that the phonon bath plays a crucial part in the intergrain electron transport at moderately low and room temperatures suppressing the original intermediate state for the resonance electron tunneling, and producing new states which support the electron transport.

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