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Superconducting transport through a vibrating molecule ALEX ZAZUNOV, LPMMC, REINHOLD EGGER, Heinrich Heine Universitat, Dusseldorf, CHRISTOPHE MORA, Laboratoire Pierre Aigrain, Ecole Normale Superieure, Paris, THIERRY MARTIN, Centre de Physique Théorique Marseille — Nonequilibrium electronic transport through a molecular level weakly coupled to a single coherent phonon/vibration mode has been studied for superconducting leads. The Keldysh Green function formalism is used to compute the current for the entire bias voltage range. In the subgap regime, multiple Andreev reflection (MAR) processes accompanied by phonon emission cause rich structure near the onset of MAR channels, including an even-odd parity effect that can be interpreted in terms of an inelastic MAR ladder picture. Thereby we establish a connection between the Keldysh formalism and the Landauer scattering approach for inelastic MAR. [Phys. Rev. B 73,214501 (2006)]

Thierry Martin
Centre de Physique Théorique Marseille

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