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Theory of zero-bias anomaly in low-temperature inelastic tunneling spectroscopy YOSHIHIRO ASAI, Nanosystem Research Institute (NRI) “RICS”, AIST, Tsukuba, Ibaraki 305-8568, Japan — A small zero-bias anomaly (ZBA) in inelastic tunneling spectroscopy (IETS) through nonmagnetic quantum wires has been suggested experimentally at low temperatures [1,2]. Here, the mechanism is discussed theoretically with special attention paid to contributions from low energy phonons [3]. Our theoretical calculations, using an electron-phonon coupling model, predict the ZBA. While experimental information is still limited, our theoretical result agrees with existing experiments. The theory provides useful information, characterizing the ZBA in a nonmagnetic junction.

[1] L. F. Spietz, Ph.D. dissertation, Yale University, 2006.

[2] Y. Selzer, M. A. Cabassi, T. S. Mayer, and D. L. Allara, *Nanotechnology* 15, S483 (2004).

[3] Y. Asai, *Phys. Rev. B Rapid Commun.*, in press.

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