

Abstract Submitted
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Thermoelectric Properties of Graphene Ribbons¹ ENRIQUE

MUNOZ, Instituto de Fisica, Pontificia Universidad Catolica de Valparaiso, Chile — Several theoretical and experimental studies have been recently concerned with electric and thermal transport in graphene layers and ribbons, where propagation of electrons [1] and phonons [2] seems to be dominated by a ballistic mechanism. Of particular interest in this context is the identification and characterization of thermoelectric effects [3], which represent a promising alternative for energy recovery in technological applications. In the present work, the effect of the electron-phonon interaction over a predominantly ballistic transport mechanism in graphene ribbons is studied in the context of thermoelectricity. Theoretical estimations of the thermopower S , and the corresponding figure of merit ZT , are presented for this system as a function of temperature.

[1] K. Saito, J. Nakamura, and A. Natori, “Ballistic thermal conductance of a graphene sheet,” *Phys. Rev. B* 76, 115409 (2007).

[2] E. Munoz, J. Lu, and B. I. Yakobson, “Ballistic thermal conductance of graphene ribbons,” *Nano Lett.* 10, 1652 (2010).

[3] Y. Ouyang and J. Guo, “A theoretical study on thermoelectric properties of graphene nanoribbons,” *Appl. Phys. Lett.* 94, 263107 (2009).

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