

Abstract Submitted  
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**Temperature dependent resistivity of suspended graphene** EROS MARIANI, FELIX VON OPPEN, Freie Universitaet Berlin, FREIE UNIVERSITAET BERLIN TEAM — In this talk we discuss the temperature dependence of the resistivity for suspended single layer graphene, due to electron-phonon scattering. All the temperature regimes are studied, as well as the contributions due to the different acoustic phonon branches in graphene. We show how tension in the membrane suppresses the otherwise dominant contribution due to flexural phonons [1], leaving a linear temperature scaling compatible with recent experiments. The eventual crossover to quadratic temperature dependence at very high temperatures could be used as an experimental tool to investigate the otherwise unknown strength of the tension. Finally, we discuss the transition to the quasi-nondegenerate regime for electrons in graphene. This is relevant for current experiments on the temperature dependent resistivity in most temperature regimes, and can shed light on the unexpected density dependence of the linear-T resistivity.

[1] Eros Mariani and Felix von Oppen, Phys. Rev. Lett. **100**, 076801 (2008)

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