

Abstract Submitted
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Limits on electron quality in suspended graphene due to flexural phonons EDUARDO V. CASTRO, H. OCHOA, Instituto de Ciencia de Materiales de Madrid (CSIC), Spain, M.I. KATSNELSON, Radboud University Nijmegen, Institute for Molecules and Materials, The Netherlands, R.V. GORBACHEV, D.C. ELIAS, K.S. NOVOSELOV, A.K. GEIM, School of Physics & Astronomy and Manchester Centre for Mesoscience & Nanotechnology, University of Manchester, UK, F. GUINEA, Instituto de Ciencia de Materiales de Madrid (CSIC), Spain — The temperature dependence of the mobility in suspended graphene samples has been investigated. In clean samples, flexural phonons become the leading scattering mechanism at temperature $T > 10$ K, and the resistivity increases quadratically with T . Flexural phonons limit the intrinsic mobility down to a few m^2/Vs at room T , a value that is routinely achievable for graphene on a substrate. Their effect can be eliminated by applying strain. Similar qualitative behavior, even though with important quantitative differences, has been found for suspended bilayer graphene.

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