

Abstract Submitted
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Observation of the Kohn anomaly near the K point of bilayer graphene DANIELA MAFRA, LEANDRO MALARD, STEVE DOORN, HAN HTOON, JOHAN NILSSON, ANTONIO CASTRO NETO, MARCOS PIMENTA — Graphene systems exhibit a strong electron-phonon coupling at special points in the Brillouin zone, that softens the phonon energy and gives rise to kinks in the phonon dispersion which are called Kohn anomaly. The electron-phonon coupling is expected to be strong at the K point, but Raman experiments in graphene systems performed with visible light cannot probe phonons near the K point. This work presents a resonance Raman investigation of AB-stacked bilayer graphene using laser lines in the near infrared and visible range. The Kohn anomaly for both symmetric and anti-symmetric phonons was evidenced, and our results show the importance of considering higher renormalization terms such as electron-electron interactions to correctly describe the phonon dispersion near the K point, confirming the theoretical predictions by Lazzeri et al. [1]. [1] M. Lazzeri et al., Phys. Rev. B. 78, 081406(R) (2008).

Daniela Mafra

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