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Phonons, plasmons and impurities in Graphene probed with STM VICTOR BRAR, (Dept. of Physics at U.C. Berkeley / Lawrence Berkeley National Lab, YUNABO ZHANG, MELISSA PANLASIGUI, CAGLAR GIRIT, Dept. of Physics at U.C. Berkeley, ALEX ZETTL, MICHAEL CROMMIE, Dept. of Physics at U.C. Berkeley / Lawrence Berkeley National Lab — It has been shown that the electronic structure of graphene is altered by interactions with plasmons, phonons and impurities. We probe such interactions at the atomic scale using scanning tunneling spectroscopy measurements on gated graphene flakes at 4.2K in an UHV environment. Our measurements show that collective excitations can be observed in the graphene tunneling spectra. By varying the voltage on the backgate of our devices, we are able to measure the charge density dependence of these features. We further probe atomic scale variations in the LDOS of graphene caused by impurities on the surface. We analyze our results in terms of graphene 2D electronic structure.

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