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Quasiparticle interference patterns in bilayer graphene with trigonal warping

<u>Vardan Kaladzhyan</u>[a*], Frédéric Joucken[b], Zhehao Ge[b], Eberth A. Quezada-Lopez [b], Takashi Taniguchi[c], Kenji Watanabe[d], Jairo Velasco Jr[b], Cristina Bena[e]

a. Department of Physics, University of Basel, Klingelbergstrasse 82, CH-4056 Basel, Switzerland
b. Department of Physics, University of California, Santa Cruz, California, USA
c. International Center for Materials Nanoarchitectonics, National Institute for Materials Science, 1-1 Namiki, Tsukuba 305-0044, Japan
d. Research Center for Functional Materials, National Institute for Materials Science, 1-1 Namiki, Tsukuba 305-0044, Japan
e. Institut de Physique Th\'eorique, Universit\'e Paris Saclay, CEA CNRS, Orme des Merisiers, 91190 Gif-sur-Yvette Cedex, France

* email : vardan.kaladzhyan@phystech.edu

We calculate the form of quasiparticle interference patterns in bilayer graphene within a low-energy description, taking into account perturbatively the trigonal warping terms. We introduce four different types of impurities localized on the A and B sublattices of the first and the second layer, and we obtain closed-form analytical expressions both in real and Fourier spaces for the oscillatory corrections to the local density of states generated by the impurities (see Figure 1). Finally, we compare our findings with recent experimental and semi-analytical T-matrix results from arXiv:2104.10620 and we show that there is a very good agreement between our findings and the previous results, as well as with the experimental data.
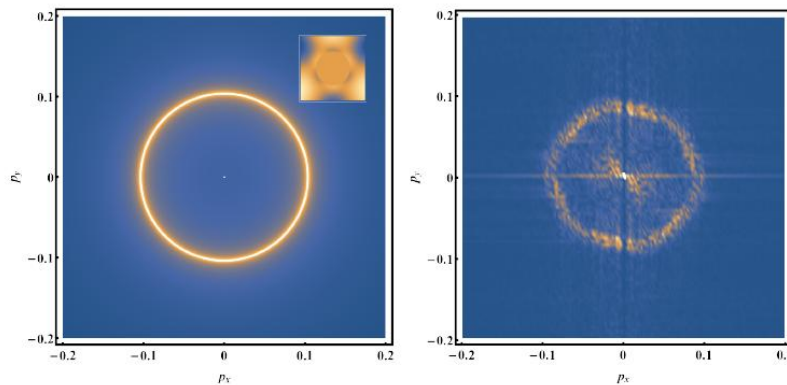
Figure 1 : Analytically calculated and experimentally measured quasiparticle interference patterns are presented in dimensionless momentum space in the left and right panels, respectively.