Optical conductivity in the paramagnetic phases of rhombohedral trilayer graphene

Rodrigo Soto Garrido
Vladimir Juričić and Enrique Muñoz

Pontificia Universidad Católica de Chile, Vicuña Mackenna 4860, Santiago, Chile

rodsoto@uc.cl

Abstract (Century Gothic 11)

Rhombohedral trilayer graphene (RTG) has been the focus of special interest in the last years, since it hosts many different interaction-driven phases, with the metallic ones yielding unconventional superconducting orders upon doping [1,2). In this talk we present the optical conductivity (using the low-energy effective theory) for the three proposed paramagnetic metallic ground states [3]: a fully gapped valence-bond state, the bond-current state and the rotational symmetry breaking charge-density wave. We show that the optical conductivity presents specific features for each of the states and can therefore be used to distinguish between these different propose metallic ground states [4].

References

[1] Zhou, Haoxin, et al. Nature 598.7881 (2021): 429-433.
[2] Zhou, Haoxin, et al. Nature 598.7881 (2021): 434-438.
[3] Szabó, András L., and Bitan Roy. *Physical Review B* 105.8 (2022): L081407.
[4] Juričić, Vladimir, Enrique Muñoz, and Rodrigo Soto-Garrido. *Nanomaterials* 12.21 (2022): 3727

Figures

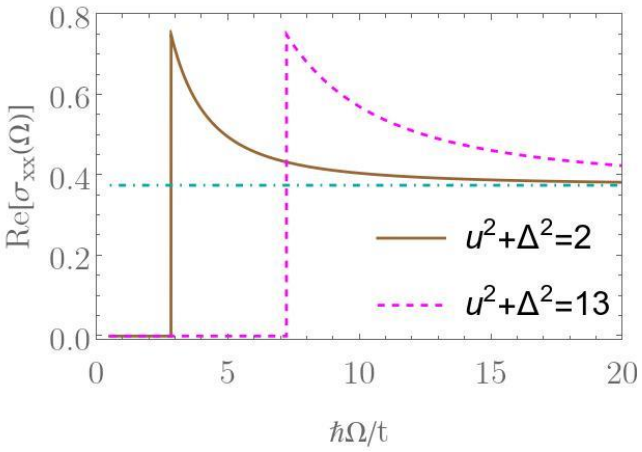

Figure 1: Real part of the optical conductivity for the VBO order.

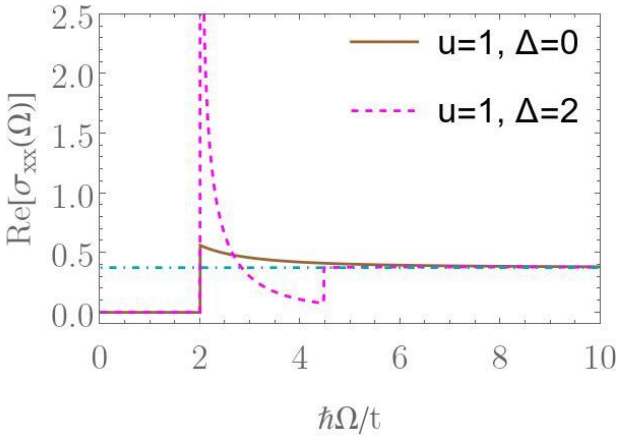

Figure 2: Real part of the optical conductivity for the BC order.