

# Nano-optical properties of twisted bilayer graphene near the magic angle

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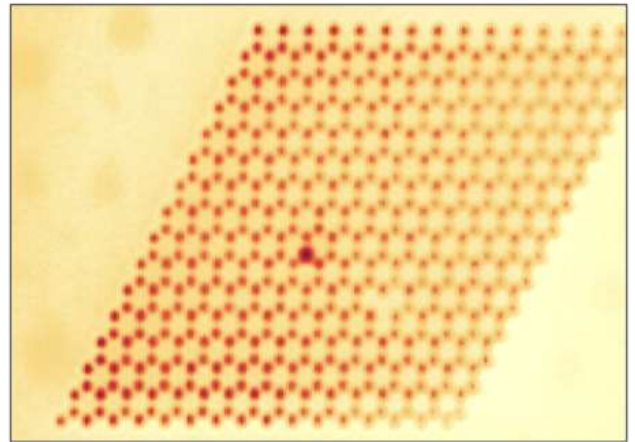
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Twisted bilayer graphene near the magic angle (MABG) exhibits flat superlattice minibands. Several strongly correlated phases have been observed, including superconductivity and the Mott-like insulating state [1,2]. Here, we present studies on MABG using scanning nearfield optical microscopy. This technique allows for probing optical excitations such as plasmon polaritons on nanometer length-scales. We studied plasmon excitations associated to vertical transitions between the flat bands and the first excited bands close to the K point of the Moiré lattice Brillouin zone [3]. We will also discuss collective excitations of nano-engineered superlattices of other 2D-materials, such as h-BN [4] and WSe<sub>2</sub>.



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## References

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- [1] Y. Cao et al. *Nature* 556, 80 (2018), Cao et al. *Nature* 556, 43 (2018).
- [2] Lu et al., Arxiv 1903.06513 (2019)
- [3] Hesp et al., in preparation
- [4] Herzig Sheinfux et al., in preparation