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Corrections & amendments

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Publisher Correction: Optical properties, plasmons, and orbital Skyrme textures in twisted TMDs

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Correction to: *npj Quantum Materials* https://doi.org/10.1038/s41535-025-00771-6, published online 18 June 2025

The original version of this Article presented portions of the main text in an incorrect order. As a result, changes have been made to both the PDF and HTML versions of the Article to improve its readability. The content of the Article has not been altered.

The portion of text in the original version reading:

"For a 2D system embedded in a homogeneous and isotropic dielectric environment with a dielectric permittivity $\bar{\varepsilon}$, the non-retarded Coulomb propagator is (In writing Eq. (26) we have neglected finite-thickness effects. In a semiconducting system of thickness d, the Coulomb propagator $2\pi/(\bar{\varepsilon}q)$ in Eq. (26) is replaced by the famous Keldysh interaction $L(q) = 2\pi K(q)/q$ (Keldysh, L. V. Coulomb interaction in thin semiconductor and semimetal films. http://jetpletters.ru/ps/1458/article_22207.pdf JETP Lett. 29, 658 (1979) and Rösner, M., Şaşıoğlu, E., Friedrich, C., Blügel, S., & Wehling, T. O. Wannier function approach to realistic Coulomb interactions in layered materials and heterostructures. https://doi.org/10.1103/PhysRevB.92.085102Phys. Rev. B 92, 085102 (2015)), where $K(q) \equiv \frac{2[\epsilon_i \cosh(qd)+\epsilon_b \sinh(qd)]}{\epsilon_i(\epsilon_a+\epsilon_b)\cosh(qd)+(\epsilon_i^2+\epsilon_a\epsilon_b)\sinh(qd)}$.

Here, ϵ_i is the intrinsic dielectric constant of the semiconducting system and ϵ_a, ϵ_b are the top and bottom dielectric constants, respectively. This interaction has been used e.g., to calculate the plasmon dispersion in monolayer TMDs (see, for example, Torbatian, Z. & Asgari, R. Plasmonic physics of 2D crystalline materials. https://doi.org/10.3390/app8020238 Appl. Sci. 8, 238 (2018)). However, we highlight that such finite-thickness effects do not alter the long-wavelength dispersion relation because, in this limit, the plasmon wavelength is much larger than the thickness d of the TMD. Indeed, taking the limit $qd \ll 1$ of $K(q)$, one recovers the Coulomb propagator r $2\pi/(\bar{\varepsilon}q)$ in Eq. (26), with $\bar{\varepsilon} = (\epsilon_a + \epsilon_b)/2$.):"

now reads:

"For a 2D system embedded in a homogeneous and isotropic dielectric environment with a dielectric permittivity $\bar{\varepsilon}$, the non-retarded Coulomb propagator is:"

The text in parenthesis has been moved later in the text such that:

"Note that we have neglected the frequency dependence of $\bar{\varepsilon}$ on purpose, with the aim of highlighting *intrinsic* features of the plasmonic spectrum of twisted homobilayer TMDs. Also, in our numerical calculations, we have considered an isolated system in vacuum (i.e., a suspended twisted homobilayer TMD), for which $\bar{\varepsilon} = 1$."

now reads:

"Note that we have neglected the frequency dependence of $\bar{\varepsilon}$ on purpose, with the aim of highlighting *intrinsic* features of the plasmonic spectrum of twisted homobilayer TMDs. In writing Eq. (26) we have also neglected finite-thickness effects. In a semiconducting system of thickness d, the Coulomb propagator $2\pi/(\bar{\varepsilon}q)$ in Eq. (26) is replaced by the famous Keldysh interaction $L(q) = 2\pi K(q)/q$ [57,58], where $K(q) \equiv \frac{2[\epsilon_i \cosh(qd)+\epsilon_b \sinh(qd)]}{\epsilon_i(\epsilon_a+\epsilon_b)\cosh(qd)+(\epsilon_i^2+\epsilon_a\epsilon_b)\sinh(qd)}$. Here, ϵ_i is the intrinsic dielectric constant of the semiconducting system and ϵ_a, ϵ_b are the top and bottom dielectric constants, respectively. This interaction has been used e.g., to calculate the plasmon dispersion in monolayer TMDs (see, for example, [59]). However, we highlight that such finite-thickness effects do not alter the long-wavelength dispersion relation because, in this limit, the plasmon wavelength is much larger than the thickness d of the TMD. Indeed, taking the limit $qd \ll 1$ of $K(q)$, one recovers the Coulomb propagator r $2\pi/(\bar{\varepsilon}q)$ in Eq. (26), with $\bar{\varepsilon} = (\epsilon_a + \epsilon_b)/2$. Also, in our numerical calculations, we have considered an isolated system in vacuum (i.e., a suspended twisted homobilayer TMD), for which $\bar{\varepsilon} = 1$."

Additionally, in-line references have been converted to numbered references [57-59]. References [57-83] of the original version have been renumbered as [60-86] of the corrected version and are referred to as such throughout the text.