



Microscopic insights into superconductivity in 2D transition metal dichalcogenides

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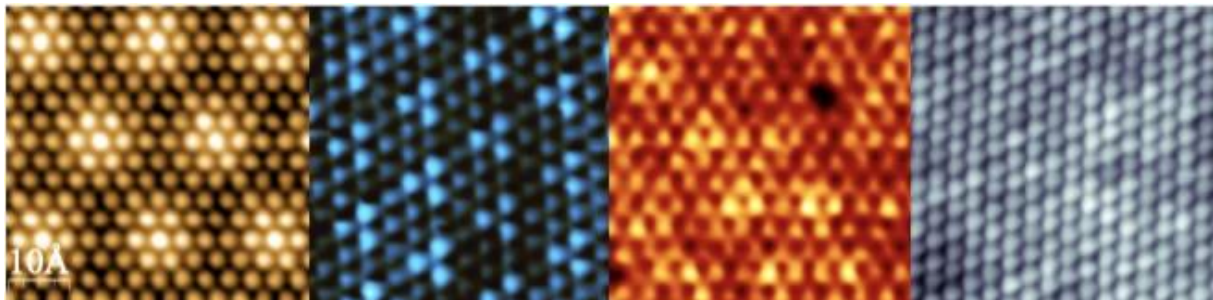
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Van der Waals layered materials are an ideal playground for the investigation of exotic electronic phases in two dimensions due to greatly enhanced many-body interactions.

In this talk, I will present our recent results on the existence of a soft collective mode in superconducting single-layer (SL) NbSe₂, observed as a characteristic resonance excitation in high resolution scanning tunnelling microscopy/spectroscopy (STM/STS) at 350 mK. Aided by a microscopic model, we interpret this resonance as a Leggett mode that represents the fluctuation towards a proximate f-wave triplet state.

I will further present the impact of proximity effects on the superconducting state of SL-NbSe₂ of four electronically distinct substrates, namely bilayer graphene (BLG), boron nitride (h-BN), Au(111), and bulk WSe₂ by combining STM with ARPES measurements. Finally, I will discuss how to tune 2D superconductivity by using different kinds of atomic dopants.



STM measurements of SL-NbSe₂ grown on Au(111), BLG, h-BN, and WSe₂ (from left to right).

20.01.2022 at 09:00

Seminarraum A, Währinger Straße 17, 2nd floor, 1090 Wien

or online

<https://univienne.zoom.us/j/94823227234?pwd=QkY4dkxKbFI0Vk9weE5jTmlwZ04wQT09>

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