

Collective modes of superconducting monolayer NbSe₂

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While bulk 2H-NbSe₂ is generally accepted to be a conventional superconductor, several unconventional features of the superconducting state have been reported in the monolayer limit, including the breaking of threefold symmetry in magnetotransport and anomalously large in-plane critical fields. In this talk, I will first present another unconventional feature: the existence of satellite peaks in the STM spectra of NbSe₂ monolayers which exist only in the superconducting state [1]. After discussing potential candidate explanations, I will propose a scenario of competing pairing between s-wave and subleading f-wave triplet channels to address the different experimental observations. In this scenario, the STM peaks can be interpreted as a superconducting collective Leggett mode.

References

- [1] Wan et al, arxiv:2101.04050

Figures

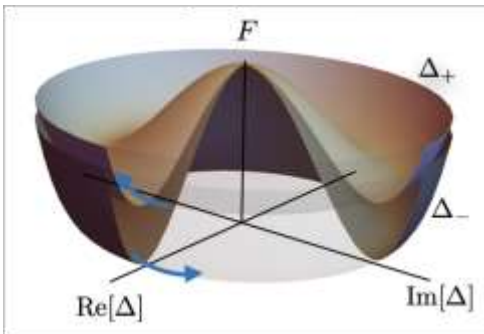


Figure 1: Relative phase oscillations of two pairing fields give rise to a Leggett collective mode. From Ref. [1]