

Investigation of Moiré Structures and Excitonic Behaviors in WS₂ Twisted Homobilayers

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Moiré excitons in transition metal dichalcogenides have attracted considerable attention in recent years due to their unique electronic and optical properties. However, experimentally exploring the connection between moiré pattern and electronic structures remains challenging. In this study, we report the fabrication of WS₂ twisted homobilayers on hollow substrates, enabling the study of excitonic properties and microscopic moiré structures using transmission electron microscopy. Through photoluminescence and differential reflectance measurements, we detect a unique low energy signal, which we attribute to moiré excitons. This versatile platform provides new opportunities to explore the interplay between moiré structure and excitonic behavior.

Key words

:transitional metal dichalcogenides , van der Waals bilayer, moiré exciton

Primary authors: LU, ChengYi (Students); Prof. HSU, Wei-Ting (National Tsing Hua University)

Presenter: LU, ChengYi (Students)

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