

NSYSU
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Frontier of laser-based photoemission on 2D materials

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Abstract

Since the early studies of two-dimensional (2D) layered materials [1], its potential applications have been developed in various research fields ranging from electronics [2], thermoelectric devices [3], photonics [4], as well as superconductivity [5]. In order to understand the electronic structure of 2D materials underlying their possible device functionalities, several spectroscopic and microscopic tools have been applied. These studies include scanning tunneling microscopy [6], ultrafast optical spectroscopy [7], de Haas-van Alphen effect [8], as well as angle-resolved photoelectron spectroscopy (ARPES) [9]. Especially in ARPES, the electronic band structure can be mapped directly with energy and momentum resolution, allowing fundamental insights into the electron transport in 2D materials. In combination with ultrafast lasers, laser-based ARPES has further provided a comprehensive way to look at the electron dynamics on the sub-picosecond time scale [10].

In this seminar, the current frontier of laser-based ARPES on 2D materials will be briefly summarized. Thereafter our latest construction and preliminary results of two-photon photo-emission on NiTe_2 will be discussed.

Reference

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