國立中山大學物理系

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SEMINAR ANNOUNCEMENT

Recent development of angle-resolved photoelectron spectroscopy

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Abstract

With the increasing importance of material science in our daily lives, it has become critically important to characterize the optical and electronic properties of materials in great detail [1]. In strong contrast to optical spectroscopies where the optical transitions can be measured with unprecedented energy resolution but without direct momentum information [2], angle-resolved photoelectron spectroscopy allows a full mapping of the energy-momentum dispersion of electronic states in solids [3]. In this talk, an overview connecting the earlier photoelectric effect [4] to the most recent photoelectron momentum microscopy will be provided [5].

More specifically, a brief review of our laser-based photoelectron spectroscopy will be given. By combining a femtosecond laser light source [6] with the time-of-flight momentum microscope, resonant two-photon photoemission on Ag(111) can be observed with its characteristic parabolic energy-momentum dispersion relation and circular momentum patterns in the two-dimensional momentum space [7]. As a further extension of our experimental setup, our recent construction of non-collinear optical parametric amplifiers with a widely tunable photon energy range will be discussed [8].

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