

Angle-Resolved Photoemission Spectroscopy – Probing electrons in superconductors using Einstein's idea

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ABSTRACT:

Einstein solved the puzzle of the photoelectric effect more than one hundred years ago. Many applications have been developed utilizing the photoelectric effect. Among them Angle-Resolved Photoemission Spectroscopy (ARPES) has become a powerful experimental technique in condensed matter physics. In the past two decades, ARPES unveiled many mysteries in the high-temperature superconductors. Here we report the discovery of particle-hole asymmetry in underdoped BSCCO systems. This progress can help us better understand the famous pseudo-gap phenomena in the high- T_c superconductors, and also give us a better picture of the Fermi surface topology in the under-doped BSCCO superconductors.