

Abstract Submitted
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Probing many body effects using Fourier Transform Scanning Tunneling Spectroscopy: Can spin-orbit splitting in dispersion be observed in q-space? GELAREH FARAH, Univ of British Columbia, UBC LABORATORY FOR ATOMIC IMAGING RESEARCH (LAIR)) TEAM — Well studied surface systems such as Ag and Cu provide a safe platform to test novel spectroscopy methods that can have extended applications in near future. Our current focus is given to Fourier Transform Scanning Tunneling Spectroscopy (FT-STS) that allows us to study scattering effects (quasiparticle interactions - namely QPI) of CO and Co on Cu(111) surface. Magnetic Co adatoms are expected to generate a spin-orbit split in dispersion in QPI(q) space, the existence of which is confirmed by the k-space angle-resolved photo-emission spectroscopy (ARPES) of Cu(111) surface in the recent years. Hence the previously observed electron-phonon kink and spin-orbit splitting of the dispersion, as well as the scattering properties of CO molecules and Co adatoms, should also be observable in QPI space via FT-STS of Cu(111), and compatible with previous studies on similar systems. We are using a low temperature (4.2 K) commercial Scanning Tunneling Microscope (CREATEC STM) that operates using Nanonis electronic controllers and software which allows us to perform FT-STS as well as topological imaging.

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