Observation of novel interference patterns in BixFe1-xTe3 by Fourier transform scanning tunneling spectroscopy (FT-STS) YOSHINORI OKADA, Boston College, CHETAN DHITAL, WEN-WEN ZHOU, HSIN LIN, SUSMITA BASAK, ARUN BANSIL, YAOBO HUANG, HONG DING, ZIQIANG WANG, STEPHEN WILSON, VIDYA MADHAVAN — We utilize Fourier transform scanning tunneling spectroscopy (FT-STS) to probe the surface of the magnetically doped TI, Bi2-xFexTe3. Our measurements show the appearance of a hitherto unobserved channel of electronic backscattering along the surface q-vector. By referencing the FT-STS with angle-resolved photoemission spectroscopy (ARPES) data, we formulate a simple model showing that these new vectors are fully consistent with spin-flip scattering. Our combined data therefore present compelling evidence for the first momentum resolved measurement of enhanced backscattering due to magnetic impurities in a prototypical TI.