

Abstract Submitted
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$d_{xz/yz}$ subband structure and Chiral Orbital Angular Momentum of Nb doped SrTiO_3 surface states¹ SHORESH SOLTANI, SOOHYUN CHO, Physics Department, Yonsei University, Seoul 120-749, Korea Center for Correlated Electron Systems, Institute for Basic Science, Seoul 08826, Korea, HANYOUNG RYU, GARAM HAN, Center for Correlated Electron Systems, Institute for Basic Science, Seoul 08826, Korea, TIMUR KIM, MORITZ HOESCH, Diamond Light Source, Harwell Campus, Didcot OX11 0DE, United Kingdom, CHANGYOUNG KIM, Center for Correlated Electron Systems, Institute for Basic Science, Seoul 08826, Korea Department of Physics and Astronomy, SNU, Seoul, Korea — Using angle resolved photoemission spectroscopy (ARPES), we investigate subband structure and chiral orbital angular momentum (OAM) texture on the surface of lightly electron doped SrTiO_3 single crystals. Our linearly polarized light ARPES data taken with 51 eV photons, reveal additional subbands for out-of-plane $d_{xz/yz}$ orbitals in addition to the previously reported ones. Our CD-ARPES data reveal a chiral OAM structure which we use as a clue to explain the origin of linear Rashba-like surface band splitting of Ti 3d t_{2g} orbitals. The observed CD signal is enhanced near crossing points, where different orbitals hybridize, compatible with a linear Rashba-like surface band splitting.

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