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Angle Resolved Photoemission Study of Surface States and Orbital Angular Momentum Structure in $SrTiO_3$ SHORESH SOLTANI, Institute of Physics and Applied Physics, Yonsei University, Seoul, 120-749, Korea, BEOMYOUNG KIM, Institute of Physics and Applied Physics, Yonsei University, Seoul, 120-749, Korea Advanced Light Source, Lawrence Berkeley National laboratory, Berke, GARAM HAN, SOOHYUN CHO, Institute of Physics and Applied Physics, Yonsei University, Seoul, 120-749, Korea, JONATHAN DENLINGER, Advanced Light Source, Lawrence Berkeley National laboratory, Berkeley, California 94720, USA, MATS LEANDERSSON, Beamline I3, Max-lab, SE-221 00, Lund, Sweden, CHANGYOUNG KIM, Institute of Physics and Applied Physics, Yonsei University, Seoul, 120-749, Korea — The theoretical understanding of spin orbit coupling (SOC) effects in $SrTiO_3$ (STO) and $KTaO_3$ (KTO) is still in its infancy. To have a better understanding of these effects, we have performed linear and circular dichroism angle resolved photoemission spectroscopy (LD- and CD-ARPES) of surface states of STO and KTO to measure the energy band and local orbital angular momentum (OAM) structure. CD-ARPES measurement revels the OAM chiral structure. Using ARPES results and a new OAM based Hamiltonian we try to explain the origin of band splitting. We believe that OAM has an important role in the surface band splitting and the chiral structure reveled by CD-ARPES.

Shoresh Soltani
Yonsei Univ

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