

Abstract Submitted  
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**Photon energy dependent circular dichroism in angle-resolved photoemission from Au(111) surface states** HANYOUNG YOO, INKYUNG SONG, Department of Physics and Astronomy, Seoul National University, BEOMYOUNG KIM, Advanced Light Source, Lawrence Berkeley National Laboratory, SOOHYUN CHO, SHORESH SOLTANI, Department of Physics and Astronomy, Seoul National University, TIMUR KIM, MORITZ HOESCH, Diamond Light Source Ltd, Harwell Science and Innovation Campus, CHOONG H. KIM, CHANGYOUNG KIM, Department of Physics and Astronomy, Seoul National University — Circular dichroism in angle-resolved spectroscopy (CD-ARPES) has been widely used because of their potential possibility as a tool to investigate various physical aspects on electronic system. In spite of this intense interest to CD-ARPES, there is still controversy about the major factor of CD signal. To elucidate the major factor of CD, we performed ARPES experiments on Au(111) surface with circularly polarized light. Data were taken with photon energies in the range between 20 and 100 eV in order to investigate the photon energy dependent behavior in the CD. The sign of CD does not change for the photon energy within the range, inconsistent with the previous the density-functional theory (DFT) calculation. With the help of the DFT calculation with free electron final state, our results indicate that the dominant factor of CD is the orbital angular momentum (OAM) in initial state and the final state effect does minor role in CD.

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