Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Spin-orbit coupling in the band structure WSe_2 monolayers IORI TANABE, Univ of Nebraska - Lincoln, Dept. of Physics and Astronomy, ALEXEI BARINOV, Elettra Experimental Division, Sincrotrone Trieste, DUY LE, University of Central Florida, Dept. of Physics, EDWIN PRECIADO, MIGUEL ISARRARAZ, LUDWIG BARTELS, University of California Riverside, Department of Chemistry, TALAT RAHMAN, University of Central Florida, Dept. of Physics, PETER DOWBEN, Univ of Nebraska - Lincoln, Dept. of Physics and Astronomy
— We have mapped the occupied band structure of monolayer WSe_2 by small spatial spot angle resolved photoemission and have found significant spin-orbit coupling in excess of 500 meV, far larger than for MoS_2. The experimental band mapping is consistent with theoretical expectations with the top of the valence band is seen at K, not Γ, thus distinct from the band structure for the bilayer and bulk single crystals. This shift of the top of the valence band in monolayer WSe_2, from Γ to K, is also predicted in density functional theory. In general the wave vector dependent experimental band structure confirms the expectations of density functional theory.

Iori Tanabe
Univ of Nebraska - Lincoln

Date submitted: 13 Nov 2014 Electronic form version 1.4