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Spin-orbit coupling of Pt studied by circular dichroism in soft x-ray ARPES[1] JUN MIYAWAKI, ASHISH CHAINANI, YASUTAKA TAKATA, MASAKI OURA, RIKEN SPring-8 Center, YASUNORI SENBA, HARUIHIKO OHASHI, JASRI/SPring-8, SHIK SHIN, RIKEN SPring-8 Center, ISSP Univ. Tokyo, GUANG-YU GUO, Taiwan Univ., SADAMICHI MAEKAWA, JAEA, NAOTO NAGAOSA, Univ. Tokyo — Pt has a large spin-orbit coupling (SOC) and is reported to exhibit the largest spin Hall conductivity among all materials studied to date [1,2]. To establish the role of SOC in the electronic structure, we investigate the bulk electronic structure of Pt(111) using circular dichroism (spin-orbit dichroism) in soft x-ray (SX)-ARPES. We have measured band dispersions along Γ-K-X, L-W and Γ-L and the complete set of Fermi surfaces of Pt. Calculated band dispersions including SOC gives a very good match with the experimental results [2,3], thus demonstrating the role of SOC. Our results also show a k-dependent suppression of spin-orbit dichroism, implying a k-dependent quenching of the spin polarization [3]. [1] T. Kimura *et al.*, Phys. Rev. Lett. **98**, 156601 (2007). [2] G. Y. Guo *et al.*, Phys. Rev. Lett. **100**, 096401 (2008). [3] M. Gradhand *et al.*, Phys. Rev. B **80**, 224413 (2009).

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