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In situ Angle-resolved Photoemission Studies of Epitaxial $SrRuO_3$ Thin Films DAWEI SHEN, Department of Physics, Cornell University, CHARLES BROOKS, Department of Materials Science and Engineering, Pennsylvania State University, DANIEL SHAI, Department of Physics, Cornell University, DAVID SINGH, Materials Science and Technology Division, Oak Ridge National Laboratory, DARRELL SCHLOM, Department of Materials Science and Engineering, Cornell University, KYLE SHEN, Department of Physics, Cornell University
— We have performed high resolution angle-resolved photoemission spectroscopy (ARPES) studies of the electronic structure of epitaxial ferromagnetic SrRuO3 thin films grown in situ using molecular-beam epitaxy . We report the first observation of dispersive bands near the Fermi level and the Fermi surface (FS) topology. The measured FS shows good agreement with predictions from band structure calculations in the low-temperature ferromagnetic state. In addition, we address one of the open questions regarding SrRuO3 being the degree to which electron correlation affects its electron structure. Compared to the density functional calculations, our data show that the Ru t2g bands near the Fermi level are significantly renormalized by strong electron-electron correlations.

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