

Abstract Submitted
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ARPES Studies of the Evolution of the Ruthenate Family with Dimensionality JOHN HARTER, DAWEI SHEN, CAROLINA ADAMO, Cornell University, CHARLES BROOKS, Penn State University, DANIEL SHAI, ERIC MONKMAN, DARRELL SCHLOM, KYLE SHEN, Cornell University — The Ruddlesden-Popper homologous series of ruthenates exhibits a wide range of remarkable electronic phenomena coupled to dimensionality, from spin-triplet superconductivity in quasi-two-dimensional single-layer Sr_2RuO_4 , to metamagnetism and nematicity in bilayer $\text{Sr}_3\text{Ru}_2\text{O}_7$, to ferromagnetism in the fully three-dimensional pseudocubic end-member SrRuO_3 . We report high resolution angle-resolved photoemission spectroscopy measurements of the electronic structure of ruthenate films grown by molecular beam epitaxy, with particular interest in the evolution of the quasiparticle interactions with increasing dimensionality. We start by investigating the anisotropic renormalization of quasiparticles in SrRuO_3 by strong electron-boson coupling, and examine changes in the Fermi surface and associated quasiparticles as a function of temperature through the Fermi-liquid to non-Fermi-liquid crossover and above the ferromagnetic Curie temperature. We also investigate the strain dependence of the low-energy electronic structure and quasiparticle interactions of $\text{Sr}_3\text{Ru}_2\text{O}_7$.

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