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Visualizing spatial electronic reorganization across the Mott insulating transition in Mn-doped $\text{Sr}_3\text{Ru}_2\text{O}_7$ JUSTIN LESHEN, MARIAM KAVAI, IOANNIS GIANNAKIS, SHANTANU MUKHERJEE, Department of Physics, Applied Physics and Astronomy, Binghamton University, Binghamton, NY, YOSHIO KANEKO, YOSHI TOKURA, RIKEN Center for Emergent Matter Science, Wako 351-0198 Japan., WEI-CHENG LEE, PEGOR AYNAJIAN, Department of Physics, Applied Physics and Astronomy, Binghamton University, Binghamton, NY — Doped Mott insulators are susceptible to intertwined electronic ordering. A fascinating pseudogap state with a universal charge ordering intertwined with superconductivity has been the hallmark of high temperature superconducting cuprates. Here we investigate the doping induced quantum phase transition from a metallic to an AFM Mott insulating state in $\text{Sr}_3(\text{Ru}_{1-x}\text{Mn}_x)_2\text{O}_7$ - the 4d counterpart of the 3d cuprates - using spectroscopic imaging with the scanning tunneling microscope. We visualize the evolution of the electronic states and their spatial reorganization as the system is driven through the Mott insulating state by dilute Mn doping. Our experiments reveal a complex interplay between charge spin and orbital degrees of freedom and draws similarities to cuprates and Fe pnictides.

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