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Magnetic domain formation in the itinerant metamagnetic transition of $Sr_4Ru_3O_{10}$ ZHIQIANG MAO, MENG ZHOU, JOE HOOPER, Tulane University, MINGHUI YU, CHARLES O'CONNOR, University of New Orleans
— We have performed systematic investigation on the electronic transport properties of the triple-layered ruthenate $Sr_4Ru_3O_{10}$. We observed surprising anomalous features near its itinerant metamagnetic transition, including ultrasharp magnetoresistivity steps and a non-metallic temperature dependence in resistivity for upward field sweeps. These features suggest that the metamagnetic transition of $Sr_4Ru_3O_{10}$ occurs via a phase separation process with magnetic domain formation. We have also identified the phase separated regime in the magnetic field-temperature phase diagram.

Zhiqiang Mao
Tulane University

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