

Abstract Submitted
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Suppressed magnetism in Ca_2RuO_4 under applied electric currents JOEL BERTINSHAW, NAMRATA GURUNG, MAXIMILIAN KRAUTLOHER, ANIL JAIN, JUAN PORRAS, Max Planck Institute for Solid State Research, OSCAR FABELO ROSA, Institut Laue-Langevin, BJ KIM, BERNHARD KEIMER, Max Planck Institute for Solid State Research — The $4d$ -electron system Ca_2RuO_4 plays host to an exciting interplay between spin-orbit coupling and electronic correlation energies that gives rise to exotic ground states and a high sensitivity to external perturbation. Isovalent Sr-doping, hydrostatic pressure and even applied electric currents can induce dramatic changes in the exhibited electronic and magnetic properties. Here, we use single crystal neutron diffraction with in-situ applied electric currents to show that a previously identified current induced metal-insulator transition is linked to a modified distortion of the RuO_6 octahedra and a concomitant suppression of antiferromagnetic order. These results indicate a close correlation among the crystal lattice, electronic, and magnetic structures.

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