Abstract Submitted
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Visualizing ferromagnetic domains in undoped and Fe-doped $Sr_4Ru_3O_{10}$[1] PAUL SASS, WEIDA WU, Department of Physics and Astronomy, Rutgers University, ZHIQIANG MAO, PEIGANG LI, Department of Physics and Engineering Physics, Tulane University — Transition-metal oxides have proven to be a great source of interesting phenomena and new quantum phases of matter with high potential for developing exciting technologies. A remarkable sub-class of these materials with layer dependent properties is the ruthenium perovskites of the Ruddlesden-Popper series, specifically $Sr_{n+1}Ru_nO_{3n+1}$, exhibiting a range of behavior from ferromagnetism and metamagnetic quantum criticality to p-wave superconductivity. The triple layered oxide $Sr_4Ru_3O_{10}$ exhibits coexistence of ferro- ($T_C < 105$ K) and meta- ($T_M < 50$ K) magnetism with strong anisotropy. Despite many studies on bulk magnetic properties of this material, the microscopic nature of the magnetic phase is still unclear. What is lacking is the real space imaging of magnetic domains. To this end, we report our variable temperature magnetic force microscopy studies on floating-zone grown undoped and Fe-doped $Sr_4Ru_3O_{10}$ single crystals. Various stripe and branch-like domain patterns were observed below

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