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Coexistence of weak ferromagnetism and superconductivity in rutheno-cuprate $\text{RuSr}_2\text{Eu}_{1.5}\text{Ce}_{0.5}\text{Cu}_2\text{O}_{10}$ ¹ DANIEL HASKEL, NARCIZO M. SOUZA-NETO, JONATHAN C. LANG, Advanced Photon Source, Argonne National Laboratory, Argonne IL 60439, USA, OMAR CHMAISSEM, BOGDAN DABROWSKI, MSD, Argonne National Laboratory, and Physics, Northern Illinois University, De Kalb IL, USA, ISRAEL FELNER, Racah Institute of Physics, The Hebrew University, Jerusalem, Israel — We address the question of possible coexistence between weak ferromagnetism (W-FM) and superconductivity (SC) in the Ru-1222 rutheno-cuprate layered structure using element-specific x-ray magnetic circular dichroism (XMCD) and x-ray absorption fine structure (XAFS) measurements. XMCD probes Ru magnetization independently from the paramagnetic contributions of rare-earth ions and XAFS is ideally suited for detection of nano-sized impurities that may go undetected in diffraction measurements. We report the presence of a significant zero-field FM component ($0.21 \mu_{\text{B}}/\text{Ru}$) associated with Ru ions in the Ru-1222 lattice. The results, together with bulk susceptibility and resistivity measurements, imply by necessity coexistence of W-FM and SC at the atomic level in this rutheno-cuprate structure [see N. M. Souza-Neto *et al.*, Phys. Rev. B **80**, R140414 (2009).]

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Daniel Haskel
Argonne National Laboratory

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