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Magnetically induced ferroelectricity in single crystalline $\text{Lu}_2\text{CoMnO}_6$ SHALINEE CHIKARA, JOHN SINGLETON, National High Magnetic Field Lab, Los Alamos Natl Lab, HWAN YOUNG CHOI, NARA LEE, YOUNG J CHOI, Yonsei University, South Korea, VIVIEN ZAPF, National High Magnetic Field Lab, Los Alamos Natl Lab — We present pulsed-magnetic-field measurements on $\text{Lu}_2\text{CoMnO}_6$ single crystals. We are able to resolve electric polarization in single crystals for the first time. The bulk hysteretic magnetization couples to the electric polarization resulting in coupled, hysteretic, multiferroic behavior. The alternating $S = 3/2$ Co^{2+} and Mn^{4+} ions sit in a corner-sharing octahedral oxygen environment. The Co-Mn-Co-Mn spins order in an up-up-down-down (uudd) arrangement along the c -axis. The ferroelectricity was believed to originate from the exchange striction due to the uudd spin arrangement. However, recent dielectric measurements suggest polarization along the b - not the c -axis. Our results confirm that ferroelectricity is indeed observed along the b -axis and not along the uudd spin-ordering direction. This indicates a different origin for the multiferroic behavior. The frustrated spin system displays an incommensurate long-wavelength modulation that may play a role in inducing ferroelectricity.

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