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Magnetodielectric Coupling in CoSeO_4 BRENT MELOT, RAM SE-SHADRI, Materials Department, University of California, Santa Barbara, CA, 93106-5050, ABBY GOLDMAN, Physics Department, Mount Holyoke College, South Hadley, Massachusetts 01075, EFRAIN RODRIGUEZ, National Institute of Standards and Technology, Gaithersburg, MD 20899 — We investigate the magnetic phase diagram and magnetodielectric properties of CoSeO_4 , a material which contains chains of edge-sharing octahedral Co(II) connected by tetrahedral SeO_4 units. Specific heat measurements in combination with powder neutron diffraction show a transition to long-range magnetic order below 30 K. Fits to the high temperature susceptibility give a Curie-Weiss temperature of -35 K, indicating the magnetic ground state has a dominant antiferromagnetic ordering. However, magnetization measurements in a field of 100 Oe also indicate the presence of weak ferromagnetism and a field-induced transition in fields larger than 30 kOe. The zero-field magnetic structure consists of Co moments aligning antiparallel to nearest neighbors down the length of the chains. We also present evidence of a linear magnetoelectric response in the ground state magnetic phase.

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