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Magnetic Frustration and Magnetoelectric Coupling in CoSe₂O₅ BRENT MELOT, RAM SESHADRI, Materials Department, UC Santa Barbara, AMBESH DIXIT, GAVIN LAWES, Department of Physics and Astronomy, Wayne State University, EMMANUELLE SUARD, Institute Laue Langevin, Grenoble, France — We present structural and magnetic measurements on CoSe₂O₅, a compound with one dimensional chains of irregular edge-shared CoO₆ octahedra, separated by Se₂O₅ units. Below 8.5 K low-field magnetic susceptibility and heat capacity measurements show long range antiferromagnetic order develops. The magnetic structure of this ordered state has been determined by neutron diffraction to consist of moments aligned antiparallel along the length of the chain as well as antiparallel to neighboring chains. The magnetic ordering becomes more complex when the compound is cooled under strong fields, with highly non-linear M-H behavior below the ordering temperature. Measurement of the dielectric constant and pyrocurrent has also shown exposure to fields larger than 3T results in a spontaneous electric polarization of the order of 1.5 μ C m⁻² which develops below the magnetic transition temperature.

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