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Anisotropic Magnetic and Magnetotransport Properties of $\text{EuBaCo}_2\text{O}_{5.5}$ Single Crystals ZHIXIAN ZHOU, Florida State University/NHMFL, PEDRO SCHLOTTMANN, Florida State University — Magnetization, resistivity, and magnetoresistance were measured on detwinned $\text{EuBaCo}_2\text{O}_{5.5}$ single crystals over a wide range of dc magnetic fields (up to 33 T) and temperature (from 4 K to 300 K). $\text{EuBaCo}_2\text{O}_{5.5}$ has a layered structure (along the c-axis) with all the Co-ions in a trivalent state. The isothermal magnetization increases gradually until a critical field, where it undergoes a transition towards saturation for $H \parallel a$ -axis, while no similar transition is observed for H along b or c-axes. The critical field increases linearly with decreasing temperature, reaching 25 T at 4 K. From the $M(H)$ data, a saturation moment of approximately $0.8\mu_B/\text{Co}$ is determined. Coinciding with the field induced transition in the magnetization, the isothermal resistivity shows a steep decrease for $H \parallel a$ -axis. The correlations between the magnetic order and the large negative MR will be discussed. We are grateful to the late Jack E. Crow who strongly influenced this work. *This work was carried out at the NHMFL, which is partially supported by the National Science Foundation through Cooperative Agreement No. DMR-0084173 and the State of Florida.

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