Testing the Berry phase model for extraordinary Hall effect in \textbf{SrRuO}_3\textsuperscript{1} YEVENY KATS\textsuperscript{2}, ISASCHAR GENISH, LIOR KLEIN, Bar-Ilan University, Israel, JAMES W. REINER\textsuperscript{3}, M. R. BEASLEY, Stanford University — Recently it has been suggested that the complicated temperature dependence of the extraordinary Hall effect (EHE) in the itinerant ferromagnet SrRuO\textsubscript{3} could be attributed to the existence of Berry phase monopoles in the crystal momentum space [Z. Fang \textit{et al.}, Science \textbf{302}, 92 (2003)]. We test this model by measurements of EHE as a function of an applied magnetic field at a constant temperature. This provides a supplementary degree of freedom for exploring the nature of the EHE, in addition to the typical temperature-dependent measurements. We show that when temperature-dependent and field-dependent measurements are combined, the results for SrRuO\textsubscript{3} disagree with the Berry phase model. [Y. Kats \textit{et al.}, Phys. Rev. B \textbf{70}, 180407(R) (2004)]

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