Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Testing the Berry phase model for extraordinary Hall effect in $SrRuO_3$[1] YEVGENY KATS[2], ISASCHAR GENISH, LIOR KLEIN, Bar-Ilan University, Israel, JAMES W. REINER[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 $SrRuO_3$ could be attributed to the existence of Berry phase monopoles in the crystal momentum space [Z. Fang *et al.*, Science **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 $SrRuO_3$ disagree with the Berry phase model. [Y. Kats *et al.*, Phys. Rev. B **70**, 180407(R) (2004)]

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Date submitted: 30 Nov 2004 Electronic form version 1.4