Abstract Submitted
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Colossal magnetodielectric effect in DyMn2O5: Electromagnons or rare earth?[1] ANDREI SUSHKOV, DENNIS DREW, MRSEC and CNAM, Department of Physics, University of Maryland, CHRISTIAN KANT, ALEXEY SHUVAEV, ANDREI PIMENOV, ISSP, Vienna University of Technology, Austria, SERGEI ZVYAGIN, Dresden High Magnetic Field Laboratory, Germany, BERND LORENZ, University of Houston, SANG-WOOK CHEONG, Rutgers University — We report on the results of spectroscopic studies of the excitations responsible for the colossal magnetodielectric effect in DyMn2O5 [1]. On one hand, many RMn2O5 compounds have electromagnons capable of inducing large steps in the dielectric constant. On the other hand, rare earth ions can posses electric dipole moments and also can produce dielectric anomalies. Both types of excitations are expected in the experimentally difficult low energy range 0.1-1 meV. We use high frequency dielectric, Fourier transform and back-wave oscillator spectroscopies in combination with low temperature and magnetic field up to 9 T to clarify the origin of the dielectric anomaly in DyMn2O5. [1] N. Hur, S. Park, P. A. Sharma, S. Guha, and S-W. Cheong, Colossal Magnetodielectric Effects in DyMn2O5, PRL 93, 107207 (2004).

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