

Materials Science and Technology Division

## Materials Theory Seminar

### **“Of models and magnets – Low-temperature properties of the dipolar magnet $\text{LiHo}_x\text{Y}_{1-x}\text{F}_4$ ”**

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11:00 a.m.  
4515/HTML, Room 265

**Abstract:**

The rare-earth compound  $\text{LiHoF}_4$  is used as a model magnet to investigate diverse magnetic phenomena such as quantum phase transitions, spin-glass behavior and quantum annealing. Due to the tightly bound 4f electrons and a strong anisotropy caused by the crystal field the material should be a very good realization of a dipolar Ising model. Using a Monte Carlo method we calculate the phase diagram, susceptibility and specific heat for the dilute model, and compare our results to experiments. Different sets of experiments give different results, but our results agree quantitatively with some of the recent experiments.

Host: Randy Fishman