

Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Shedding Light on Dark Matter: A Faraday Rotation Experiment to Limit a Dark Magnetic Moment¹ SUSAN GARDNER, Fermilab/University of Kentucky — I describe a new possibility for the direct detection of dark matter. That is, if dark matter consists, in part, of cold, neutral particles with a non-zero magnetic moment, then, in the presence of an external magnetic field, a measurable gyromagnetic Faraday effect becomes possible. A Faraday rotation experiment can set limits on the magnetic moment of a electrically-neutral, dark-matter particle, and the limits increase in stringency as the candidate mass decreases. I describe how such could be realized and determine the limits on the magnetic moment as a function of mass which follow given demonstrated experimental capacities.

¹I acknowledge partial support from the U.S. Department of Energy under contract DE-FG02-96ER40989

Susan Gardner
Fermilab/University of Kentucky

Date submitted: 09 Jan 2009

Electronic form version 1.4