Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

Probing the Lipkin-Meshkov-Glick model with ultracold Dysprosium atoms RAPHAEL LOPES, THOMAS CHALOPIN, VASILIY MAKHALOV, ALEXANDRE EVRARD, TANISH SATOOR, JEAN DALIBARD, SYLVAIN NASCIMBENE, Laboratoire Kastler Brossel — In this talk, we will report the study of the Lipkin-Meshkov-Glick model, induced by near-resonant light coupling to the J=8 ground state of an ultracold cloud of Dysprosium. We investigate the paramagnetic to ferromagnetic phase transition expected from this model, making a full characterisation of the ground state properties as well as a quantitative study of the dynamics of the quantum critical regime. Due to the large value of J, a good qualitative agreement is found, away from the phase transition, with mean-field predictions.

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Date submitted: 25 Jan 2019 Electronic form version 1.4