

DAMOP13-2012-000006

Abstract for an Invited Paper  
for the DAMOP13 Meeting of  
the American Physical Society

**Topological phases in polar-molecule quantum magnets**

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We will show that ultracold polar molecules pinned in an optical lattice and interacting via dipolar interactions can be used to implement a huge variety of exotic quantum magnets. These can be used to realize, for example, fractional Chern insulators, symmetry protected topological phases, the bilinear-biquadratic spin-1 Hamiltonian, and the Kitaev honeycomb model. [References: PRL 109, 266804 (2012), PRB 87, 081106(R) (2013), arXiv:1212.4839 (PRL in press), arXiv:1301.5636]