

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Geometry of Spinor Condensates with Large Spins** OMNARAYANI NAYAK, University of California, Berkeley, ARI TURNER, University of Amsterdam — Laser cooled atoms with spin can become magnetically ordered in a variety of ways, like electrons in a frustrated lattice, but the phases are more geometrical in this setting. For spin one, two and three atoms, states have been predicted with a nematic symmetry (the symmetry of a toothpick), a hexagon, and an octahedron, as well as other possibilities. As the spin becomes larger, the phase diagrams become more and more complicated. I will present a geometrical way of predicting regularities in the phases as the spin increases. For a certain form of interaction, we find a phase diagram for arbitrarily large spin. (In particular, a nematic phase does not occur beyond spin 2.) We have used a mapping to a classical problem of interacting particles arranging themselves on a sphere.

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Date submitted: 09 Jan 2012

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