

Condensed Matter Theory Seminar

- Subject: **Symmetry-restoring quantum phase transition in a two-dimensional spinor condensate**
- Speaker: **Dr. Alexander Chudnovskiy (Universität Hamburg)**
- Date & time: **Friday, May 3rd, 2019 at 3:15 p.m.**
- Venue: **Seminar room 1.114**
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Bose Einstein condensates of spin-1 atoms are known to exist in two different phases, both having spontaneously broken spin-rotation symmetry, a ferromagnetic and a polar condensate. Here we show that in two spatial dimensions it is possible to achieve a quantum phase transition from a polar condensate into a singlet phase symmetric under rotations in spin space. This can be done by using particle density as a tuning parameter. Starting from the polar phase at high density the system can be tuned into a strong-coupling intermediate-density point where the phase transition into a symmetric phase takes place. By further reducing the particle density the symmetric phase can be continuously deformed into a Bose-Einstein condensate of singlet atomic pairs. We calculate the region of the parameter space where such a molecular phase is stable against collapse.