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CENTER FOR THEORETICAL PHYSICS



# Sommerfeld Theory Colloquium

Prof. Georgy Shlyapnikov

University of Paris

**"From ultracold fermionic atoms to molecules.  
Prospects for novel physics"**

I will give an overview of the studies of strongly interacting atomic fermions, emphasizing the creation of the strongly interacting (unitarity) regime and the creation of long-lived (highly-excited) weakly bound bosonic molecules and their Bose-Einstein condensation. I then focus on novel physics expected for ultracold fermionic polar molecules, such as KRb molecules recently created in experiments at JILA.

I will describe possibilities for the creation of topological  $P_x+iP_y$  phase, which is promising for quantum information processing. Another issue will be an interlayer superfluidity and related peculiar BCS-BEC crossover.

Wednesday, 10<sup>th</sup> November 2010, 10:30 h, Room 348 / 349, Theresienstr. 37 / III