

# Boulder School for Condensed Matter and Materials Physics

## Modern Aspects of Superconductivity

June 30-July 25, 2014

The 2014 Boulder school will concentrate on modern aspects of superconductivity. Superconductivity is a well-known phenomenon – it has been around for over 100 years, and BCS theory for conventional s-wave superconductors is over 50 years old. Over the last few decades, however, the field of superconductivity has witnessed a remarkable renewal of interest in the physics community. A number of reasons exist for this, including the discovery of unconventional (not ordinary s-wave) superconductivity in cuprates, heavy-fermions, and organic superconductors, and, more recently, in Fe-pnictides and Fe-chalcogenides as well as the fact that superconductivity in all these materials likely originates from screened Coulomb interactions rather than from electron-phonon interactions. Another, arguably the most fundamental reason, is that superconductivity in these novel materials emerges from a normal state that is very different from a conventional Fermi liquid. Finally there is the hope, based on specific theoretical predictions and non-stop improvements of the experimental techniques, to obtain chiral superconductivity, which would break time-reversal symmetry and exhibit a wealth of fascinating properties that are highly sought after for nano-science applications.

**Greg Boebinger (NHMFL)**

**Piers Coleman (Rutgers)**

**Liang Fu (MIT)**

**Jenny Hoffman (Harvard)**

**Bernhard Keimer (Max-Planck)**

**Steve Kivelson\* (Stanford)**

**Yuji Matsuda (Kyoto)**

**Andrew Millis (Columbia)**

**Kathryn Moler\* (Stanford)**

**Joseph Orenstein (Berkeley)**

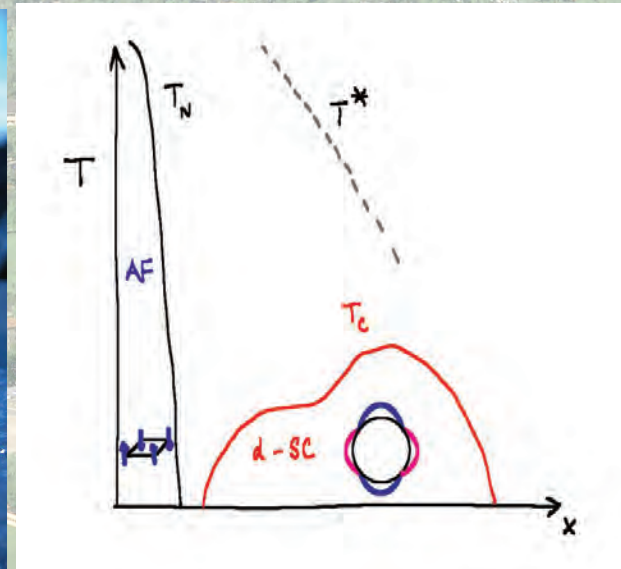
**Mohit Randeria (OSU)**

**Subir Sachdev (Harvard)**

**Manfred Sigrist (ETH-Zurich)**

**Xiao-Gang Wen\* (Perimeter Institute)**

**\* to be confirmed**



### Scientific Organizers:

Andrey Chubukov (UW-Madison)

Senthil Todadri (MIT)

Oskar Vafek (FSU)

Dan Dessau (CU Boulder)

Leo Radzihovsky (CU Boulder)

The school will pay for most local expenses, and there are travel grants available for participants from U.S. universities. Students and postdocs interested in participating should submit an electronic application by the February 15 deadline. The application form, and detailed information regarding housing, travel and financial support are available at

**<http://boulderschool.yale.edu/>**

The Boulder School in Condensed Matter and Materials Physics provides expert training, not usually available within the traditional system of graduate and post-graduate education, for advanced graduate students and postdoctoral researchers working in condensed matter physics, materials science and related fields. The School is supported by the National Science Foundation, with additional funding provided by the University of Colorado, and meets annually during July in Boulder, Colorado.