Search for Topological Phases of Matter

New Frontiers in Low-Dimensional Systems Program

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Jadwin Hall
Fourth Floor, Room 407

Topological order is a new kind of order in quantum systems which can arise in the absence of any symmetry breaking. Topologically ordered states, or topological phases, have fundamentally new physical properties, including fractionally charged quasipartcles which obey anyonic or non-abelian statistics and quantized edge states. Apart from fundamental importance, topological states may be of practical importance because they provide a platform for new kind of quantum computation. Currently, one of the main challenges in this field is to find condensed matter systems which exhibit robust and tunable topological phases.

In this short workshop, we will bring together a small number of leading researchers working on topological states in various systems, from frustrated magnets and fractional quantum Hall systems to cold atoms and Josephson junction arrays. We are hoping to cover some of the most exciting recent breakthroughs in this field. Our primary goal will be to identify the most promising future directions in the search for topological phases, as well as to formulate outstanding theoretical and experimental challenges.

Please register on line at pcts.princeton.edu/pcts

Organizers:

Dmitry Abanin, Andrei Bernevig, M. Zahid Hasan, Shivaji Sondhi

Speakers

Fakher Assaad, University Wurzburg
Bryan Clark, Princeton University
Markus Greiner, Harvard University
Zenji Hiroi, University Tokyo
Andrew Houck, Princeton University
Andreas Lauchli, Max Planck Institute
Lindsay LeBlanc, NIST
Benjamin Lev, University of Illinois at Urbana-Champaign
Roderich Moessner, MPI-PKS Dresden
Zlatko Papic, Princeton University
Mansour Shayegan, Princeton University
Steven White, University California, Irvine
Minoru Yamashita, Kyoto University