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The 9th Madan Lal Mehta Memorial
Lecture



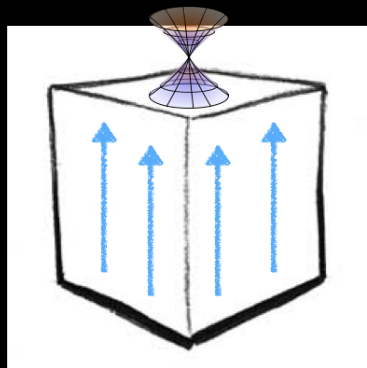
Topology and Entanglement in Quantum Matter

By Prof. Ashvin Vishwanath
Department of Physics, Harvard University

Monday, July 30, 2018 at 4.00 p.m.

Lecture Theatre, AG66, TIFR,

1-Homi Bhabha Road, Colaba, Mumbai 400005.



Although quantum mechanics is of supreme importance at the atomic scale, its effects are usually less apparent in macroscopic systems. However, with the experimental discovery of phenomena like the quantum Hall effects in the 1980s there are now several compelling examples of macroscopic phenomena which are essentially quantum mechanical. I will discuss some of these examples and highlight the important role played by topology and long-range quantum entanglement in understanding them. Finally, I will review our increased understanding of the topology of electrons in crystals, and the relevance of these ideas to a new superconductor which arises in sandwiches consisting of two sheets of graphene, rotated relative to one another by just one degree.

Prof. Ashvin Vishwanath is a quantum condensed matter theorist, known for his work on quantum phase transitions beyond the Landau-Wilson-Fisher paradigm, superconductivity and magnetism in iron-pnictide materials, his theoretical prediction of Weyl semimetals and his generalizations of the topological insulator concept beyond the single-particle approximation. His recent work has utilized our increased understanding of topological phases to predict new dualities between quantum field theories. Ashvin was born and grew up in Bangalore and received his MSc in Physics from IIT Kanpur. He completed his PhD from Princeton University and moved to MIT where he was a Pappalardo Postdoctoral Fellow. He spent twelve years on the faculty at UC Berkeley, before moving to his current position at Harvard University in 2016.



**Prof. Ashvin
Vishwanath**

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