

IIT KANPUR PHYSICS COLLOQUIUM

QUANTUM MATERIAL: A BONSAI QUANTUM UNIVERSE

ABSTRACT

Quantum materials are one of the most exciting field in condensed matter physics. Thus, I will begin with definition of Quantum materials. I will draw parallels of Quantum material with Universe (Cosmos, Quantized EM field) and argue that each Quantum material is equivalent to a mini quantum Universe. Interestingly, one can set up this mini universe with different set of rules, different fields, different particles. Then I will talk about how to prepare Quantum materials and what measurements are required to detect new particles (Dirac, Weyl, Majorana, Magnetic monopoles etc.) or emergent phenomena (Mott insulators, Superconductivity, Spin liquid etc.) in a laboratory/beam-lines. I will start from the dawn of Quantum physics and hopefully take you to some of our recent works on quantum materials.



Speaker
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