Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

" Three remarkable aspects of Weyl semi-metals"

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Abstract: The Weyl semi-metal (WSM) state is sometimes loosely referred to as the three-dimensional cousin of graphene since its low energy theory is described by an even number of copies (valleys) of the Weyl Hamiltonian. In this talk, I will try to review and give a different perspective to known features of the WSM state as well as highlight less explored aspects. In particular I will focus first on how the WSM low energy theory evades ambiguities known to occur in its high-energy physics counterparts. Remarkably the resolution of these ambiguities is related to the existence of Fermi arcs surface states in these materials. Secondly I will discuss how they enable to probe different kinds of anomaly related phenomena and conclude by exploring the rich surface state physics that a topological insulator-WSM interface can host.

References:

A. G. Grushin Phys. Rev. D. 86, 045001 (2012)
M. N. Chernodub, A. Cortijo, A. G. Grushin, K. Landsteiner, M. A. H. Vozmediano Phys. Rev. B 89, 081407(R) (2014)

12:00pm
Tuesday, November 25, 2014
***Low Room (6C-333)**

Host: Jorn Venderbos