ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
ΤΟΜΕΑΣ ΦΥΣΙΚΗΣ ΣΤΕΡΕΑΣ ΚΑΤΑΣΤΑΣΗΣ

ΠΑΝΕΠΙΣΤΗΜΙΟΥΠΟΛΗ, 157 84 ΑΘΗΝΑ

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ
ΤΟΜΕΑΣ ΦΥΣΙΚΗΣ, ΣΧΟΛΗ ΕΦΑΡΜΟΣΜΕΝΩΝ ΜΑΘΗΜΑΤΙΚΩΝ ΚΑΙ ΦΥΣΙΚΩΝ ΕΠΙΣΤΗΜΩΝ
ΠΟΛΥΤΕΧΝΕΙΟΥΠΟΛΗ, 157 80 ΑΘΗΝΑ

ΣΕΜΙΝΑΡΙΟ
ΦΥΣΙΚΗΣ ΣΥΜΠΥΚΝΩΜΕΝΗΣ ΥΛΗΣ

Τρίτη 05-02-2019 12:00 μ.μ.

Αίθουσα 027, Ισόγειο Κτηρίου Φυσικής, Πολυτεχνειούπολη Ζωγράφου

"Search for Novel Topological Weyl Semimetal Phases"

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Topology in various guises plays a central role in modern condensed matter physics. Although the original applications of topological ideas to band structures in semiconductors relied on the existence of a fully gapped bulk spectrum, more recently it has been recognized that protected surface states can arise even in *gapless* systems. The prototypical example of a gapless topological phase is a Weyl semi-metal showing linear dispersion around nodes termed as Weyl points, as the three-dimensional analog of graphene. Surface Fermi arcs are the most prominent manifestation of the topological nature of Weyl semi-metals. First, I will give an overview of topological insulators and Weyl semimetals. I will then discuss predictions of the emergence of Weyl semimetal phase (1) in the $Pb_{1-x}Sn_xTe$ which undergoes a pressure-induced metallic phase described by the Weyl scenario, and (2) in the interfacial phase-change memory (iPCM) $GeTe/Sb_2Te_3$, a promising candidate for the next generation non-volatile random-access memories.

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