

Universität Leipzig

Fakultät für Physik und Geowissenschaften

Institut für Theoretische Physik

Seminar

Festkörperphysik

Am Donnerstag, **23.06.2011**, um **15:15 Uhr** spricht

Dr. Andreas Schnyder

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über

"Gapped and gapless topological phases in condensed matter systems"

Abstract: One of the defining properties of topological insulators and superconductors, which are topological phases with a full gap in the bulk, is the appearance of topologically protected zero-energy surface or edge states, some of which are of Majorana type. But boundary modes of topological nature can also occur in (semi-)metallic systems that exhibit topologically stable Fermi surfaces or in nodal superconductors with non-trivial topology. For instance, dispersionless Andreev surface states exist on the (110) surface of a ($d_{x^2-y^2}$)-wave superconductor (e.g., in high-temperature superconductors), or at the zig-zag edge in graphene. In this talk I present a classification of both gapped and gapless topological phases in terms of symmetry and spatial dimension. As a consequence of the non-trivial bulk topology all of these systems exhibit topologically stable surface states, which are either dispersionless or show a linear dispersion as a function of edge or surface momentum. As a concrete example superconductors without inversion symmetry are discussed in detail. The dispersionless Andreev surface bound states that occur in these systems have many observable consequences, in particular, a zero-bias conductance peak in the scanning tunneling spectra.

Ort: SR 224, Linnéstraße 5

Interessenten sind herzlich eingeladen!

gez. Prof. Haase und Prof. Rosenow