CFEL SCIENCE

SEMINAR

5th October 2016 - 2:00 p.m.

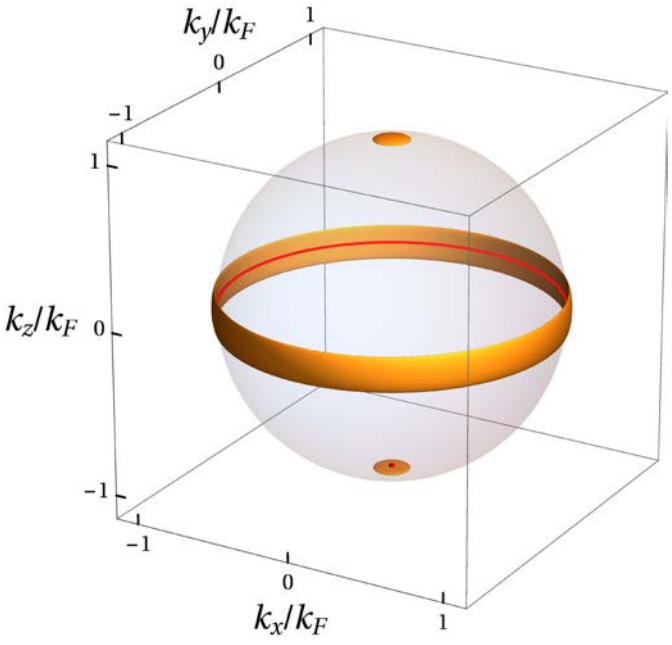
CFEL-bldg. 99, seminar room IV

Carsten Timm

Institute of Theoretical Physics, TU Dresden

Inflated nodes and surface states of topological superconductors

The new paradigm of topology in condensed matter physics does not only pertain to insulators and semimetals but also to superconductors. Topological superconductors are predicted to show many novel physical properties. In the talk, I will consider two examples. First, noncentrosymmetric superconductors with spin-orbit coupling generically show mixing of singlet and triplet Cooper pairs and have energy gaps with line nodes in momentum space. These are associated with flat zero-energy bands of Majorana surface states with interesting magnetic properties. Second, centrosymmetric materials in which superconductivity breaks time-reversal invariance are even more exotic. I will argue that they generically show extended, two-dimensional Fermi surfaces (see figure). Such Fermi surfaces are of course the hallmark of normal metals but here they are both topologically protected and energetically stable insuperconductors.



Host: Angel Rubio – MPSD-CFEL Theory Department