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Author: Diez, Mathias  
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Stellingen
behorende bij het proefschrift
On electronic signatures of topological superconductivity

1. Sufficiently narrow superconducting wires can support more than a single Majorana bound state at each end.

Chapter 2

2. If the pair potential of a superconductor depends on the momentum, then for \( p \)-wave pairing this is the \textit{canonical} momentum while for \( d \)-wave pairing it is the \textit{covariant} momentum.

Chapter 3

3. Massless chiral Dirac fermions can exist at 40 Tesla.

Chapter 6

4. The giant magnetoresistance at the lanthanum aluminate/strontium titanate interface has a single-electron explanation.

Chapter 7

5. To observe the chiral magnetic effect of a Weyl semimetal in a \textit{finite} system one should periodically break inversion symmetry rather than oscillate the magnetic field, as in Chen’s study of an \textit{infinite} system.


6. The quantized electrical shot noise of a single Majorana edge mode in a chiral \( p \)-wave superconductor found by Gnezdilov et al. does not survive in the presence of multiple edge modes.


7. The peak of a Majorana zero mode in the differential conductance, measured by a \textit{superconducting} tunneling probe, should be at voltage \( V \) equal to the gap, instead of at \( V = 0 \) as reported by Pawlak et al.


8. If one of the superconductors in the device of Tarasinski et al. is biased at a small voltage, the \textit{dc} conductance to ground via a single-mode point contact is quantized in units of \( 2e^2/h \).


9. Topological insulators are the opposite of a “kroket”. Both have surface states of a topological origin, but for the topological insulator it is the surface rather than the bulk that is compressible.

Mathias Diez
8 september 2015