

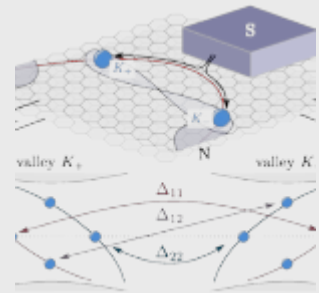
## Transport Through Topological Confined States of Matter

Title: Transport Through Topological Confined States of Matter.

When: Monday, January 30, (2017), 12:00.

Place: Departamento de Física Teórica de la Materia Condensada, Facultad Ciencias, Module 5, Seminar Room (5th Floor).

Speaker: Patrik Recher, Technische Universität Braunschweig Institut für Mathematische Physik, Braunschweig, Germany.



In my talk, I will introduce transport calculations through topologically confined states of matter. In graphene and silicene, valley chiral states can be created by a mass domain wall that is tunable by an applied voltage. Contacting these valley chiral states with superconductors, I will discuss novel ways to split spin-entangled Cooper pairs using the valley degree of freedom [1] and to tune the Josephson effect from a  $2\pi$  to  $4\pi$  phase relation when in addition spin-orbit coupling is present. Further topological confined states of interest are Majorana bound states (MBS) in topological superconductors. I will show that transport through networks of such MBS can be conveniently described using full counting statistics and that unique signatures of MBS are seen in Fano resonances in a setup where the MBS are coupled to a normal metal lead and to a quantum dot.

### References

A. Schroer, P.G. Silvestrov, and P. Recher, Phys. Rev. B 92, 241404(R) (2015).

[More information on IFIMAC Website](#)