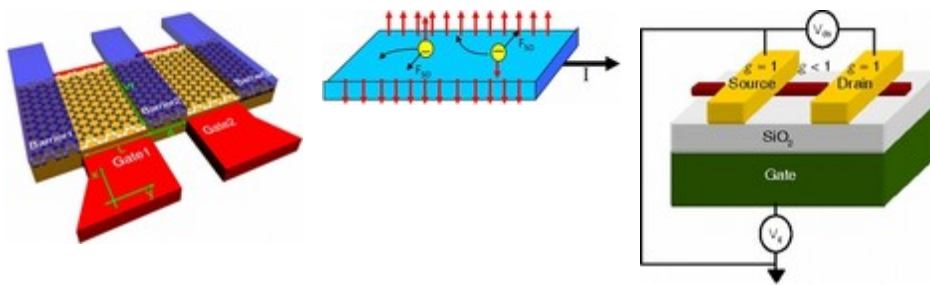


## Lehrstuhl für Theoretische Physik IV: Mesoskopische Physik

### Research topics

- >Mesoscopic effects and quantum coherence in solid state nanostructures
- >Transport properties of carbon nanotubes and graphene
- >Topological Insulators
- >Spintronics: spin qubits and spin transport
- >Physics of quantum information processing
- >Physics of 1D systems: Luttinger liquids
- >Nano electromechanical systems



### Selected recent publications

J. C. Budich, F. Dolcini, P. Recher, and B. Trauzettel

*Phonon induced backscattering in helical edge states*

*Phys. Rev. Lett.* **108**, 086602 (2012)

D. Tilahun, B. Lee, E. M. Hankiewicz, and A. H. MacDonald

*Quantum Hall Superfluids in Topological Insulator Thin Films*

*Phys. Rev. Lett.* **107**, 246401 (2012)

B. Büttner, C. X. Liu, G. Tkachov, E. G. Novik, C. Brüne, H. Buhmann, E. M. Hankiewicz, P. Recher, B. Trauzettel, S. C. Zhang, and L. W. Molenkamp

*Single valley Dirac fermions in zero-gap HgTe quantum wells*

*Nature Phys.* **7**, 418 (2011)

J. Schelter, P. M. Ostrovsky, I. V. Gornyi, B. Trauzettel, and M. Titov

*Color-dependent conductance of graphene with adatoms*

*Phys. Rev. Lett.* **106**, 166806 (2011)

P. Michetti, P. Recher, and G. Innaccone

*Electric-Field-control of spin rotation in bilayer graphene*

*Nano Lett.* **10**, 4463 (2010)

C. Brüne, A. Roth, E. G. Novik, M. König, H. Buhmann, E. M. Hankiewicz, W. Hanke, J. Sinova, and L. W. Molenkamp

*Evidence for the ballistic intrinsic spin Hall effect in HgTe nanostructures*

*Nature Phys.* **6**, 448 (2010)

