

# Forschungsgruppe "Nanostrukturphysik"

Prof. Dr. Ulrich Merkt

Institut für Angewandte Physik und Zentrum für Mikrostrukturforschung, Universität Hamburg

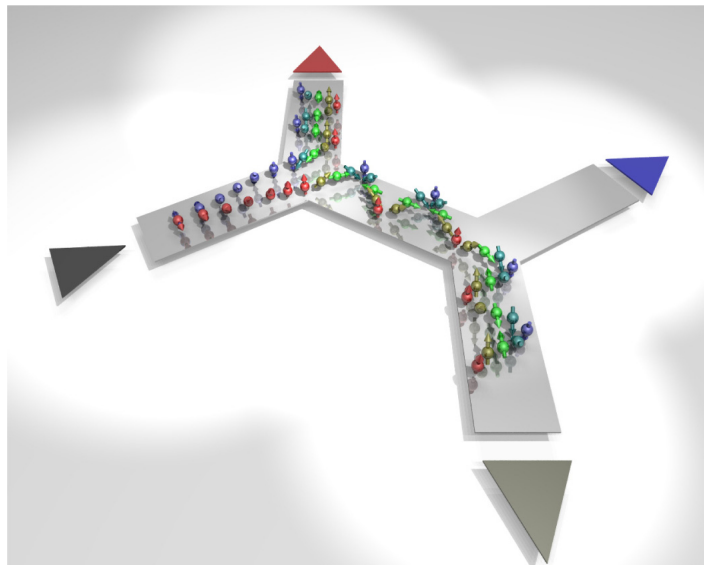
---

## Ph. D. position "Semiconductor spintronics"

### General Information

The University of Hamburg is one of the leading international centers in micro- and nanostructure research. In our research group we combine semiconductors, ferromagnets and superconductors to obtain structures with new functionalities in view of novel devices for spintronics and magneto-electronics. Micro- and nanostructures are prepared within the cleanroom and studied by various techniques such as transport measurements and magnetic-force microscopy.

The starting date of the announced Ph. D. position is 1 June 2010. The short-term contract will end on 31 May 2013. The salary will be according to the German civil services (3/4 E13 TV-L).



In the research project "Spin-filter cascades in InAs heterostructures" of the Deutsche Forschungsgemeinschaft/German Science Foundation we investigate the all-electrical generation and detection of spin-polarized currents in semiconductor devices by transport measurements at millikelvin temperatures in electric and magnetic fields. Spin-filter cascades can provide information about basic spintronic phenomena like spin precession, spin relaxation and the zitterbewegung induced by the spin-orbit interaction.

### Responsibilities

- Preparation of spin-filter cascades from InAs heterostructures in the clean room using electron beam and optical lithography, reactive ion etching and various deposition techniques

# Forschungsgruppe "Nanostrukturphysik"

Prof. Dr. Ulrich Merkt

Institut für Angewandte Physik und Zentrum für Mikrostrukturforschung, Universität Hamburg

---

- Spin-dependent transport measurements in a  $^3\text{He}$  refrigerator and a  $^3\text{He}$ - $^4\text{He}$  dilution refrigerator with high magnetic fields
- Participation in the expansion of the existing computer-based automated data acquisition systems

## Requirements

- Master or diploma in physics
- Knowledge in semiconductor physics
- Experience in spintronics and ballistic transport measurements would be helpful.

## Application details

Your application in German or English must contain

- a cover letter
- a curriculum vitae
- copies of university certificates (including grades/marks)
- a brief summary of previous research experiences
- a list of publications

Please arrange for a letter of recommendation to be sent to us.

Do not send original documents. Application documents cannot be sent back to you. In case of electronic submission please combine your documents into a single pdf file.

Deadline: 16 April 2010

### Contact

Dr. Jan Jacob  
Institut für Angewandte Physik und  
Zentrum für Mikrostrukturforschung  
Jungiusstraße 11  
20355 Hamburg  
Raum B141  
Telefon: +49-(0)40-42838-5668  
E-Mail: jjacob@physnet.uni-hamburg.de

### Applications should be sent to

Prof. Dr. Ulrich Merkt  
Institut für Angewandte Physik und  
Zentrum für Mikrostrukturforschung  
Jungiusstraße 11  
20355 Hamburg  
Raum C363  
Telefon: +49-(0)40-42838-4685  
E-Mail: umerkt@physnet.uni-hamburg.de