

**Colloquium**  
**Dahlem Center for Complex Quantum Systems**

**Probing topological states and entanglement with electron transport**

**Prof. Dr. Patrik Recher, Technische Universität Braunschweig**

**Time:** Tuesday, January 20, 2015, 16:00 c.t.

**Location:** Hörsaal A (1.3.14)

**Abstract:**

Topological states of matter represent a fascinating new field in condensed matter physics. These states appear as surface states of a suitable bulk material and therefore can be probed by electron transport. In my talk, I will give an overview about our theory work, ranging from transport through helical edge states, the one-dimensional (1D) surface states of a 2D topological insulator, to full counting statistics of networks of Majorana fermions. I will also discuss how topological insulators can be used to measure and create spin-entangled states of mobile electrons.