



Forschergruppe 877

**Universität Leipzig**  
Fakultät für Physik und  
Geowissenschaften  
Institut für Theoretische Physik

## **TKM-/FOR 877-Seminar**

Am Dienstag, dem 08.04.2014 um 13:30 Uhr spricht

**Dr. Marco Baiesi**  
(University of Padova)

über

### **The statistics of knots in polymers**

Knots appear frequently in linear polymers. The problem of their presence in DNA is resolved by specific enzymes that cut the DNA chain to restore a functional topology. However, in general, for synthetic ring polymers the topology is fixed. We study the effects and the universal statistics of configurations with fixed knots, using simple lattice models. It turns out that such statistics sensibly depends on the phase: knots are relatively rare and localized in swollen polymers, while they are more frequent and delocalized in collapsed globules. These results are linked with an interesting thermodynamic behaviour: in the competition for the length between two loops in which a collapsed ring is divided by means of a slip link, the knots enclosed in each loop determine a sort of “topological tension” that pulls the chain on the side of the more complex knot.

**Ort:** ITP, Brüderstraße 16, SR 113

*Interessenten sind herzlich eingeladen!*