

KÖLNER

Theoretisch-
Physikalisches

KOLLOQUIUM

Universität zu Köln

**Time: Friday, December 10, 2010, 16.00 h (!) Probevorlesung
16.45 h Vortrag**

Speaker: K. Le Hur, (Yale University)

Low-Dimensional Quantum Systems

Systems of low dimensions have provided special opportunities, challenges, and fascination for condensed matter physicists. Issues of long-range order, dimensional crossover, and instabilities are all significant in such systems. In this Talk, I provide a pedagogical overview of my theoretical research in relation to low-dimensional electron systems ranging from nano “zero-dimensional” systems to (quasi) twodimensional systems such as high-Tc superconductors, graphene, topological insulators and novel oxide heterostructures. We shall also spend some time on onedimensional systems which are described by the Tomonaga-Luttinger paradigm. Finally, I show that condensed matter concepts can also be applied to cold atoms in optical lattices and photon systems.