



Colloquium
Dahlem Center for Complex Quantum Systems

A new view on imperfections in one dimensional quantum liquids

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Time: Tuesday, June 11th 2013, 14:00 c.t.

Location: Hörsaal A (1.3.14)

Abstract:

In this talk, I will reconsider the general topic of impurity scattering in one dimensional quantum liquids. It is generally held that scattering centers embedded into a quantum wire generate low temperature scaling towards a fully reflecting fixed point -- the wire gets effectively cut into two. This behavior has been demonstrated for both fully coherent pointlike impurities, and fully incoherent inelastic scattering regions. In this talk I will argue that if all scattering channels are switched on simultaneously rather different behavior results: the system flows towards a highly universal stable fixed point of intermediate scattering strength. At the fixed point, half of the incoming current gets transmitted, the other half reflected, and the system becomes a perfect 'beam splitter'. We will discuss the theory behind the formation of this new transport regime, and various of its ramifications.