



Colloquium
Dahlem Center for Complex Quantum Systems

Prof. Dr. Julia Meyer
CEA Grenoble, Frankreich

Andreev current induced by ferromagnetic resonance

Location: Hörsaal A (1.3.14)

Time: Wednesday, December 5th, 2012, 14:00 c.t.

Abstract:

Ferromagnet-superconductor hybrid structures have revealed a number of interesting properties related to the interplay of spin and pairing correlations. We study ferromagnet-superconductor junctions under non-equilibrium conditions. In particular, we are interested in the charge current that may be induced at ferromagnetic resonance in the Andreev subgap regime. To this end, we study charge transport through a metallic dot coupled to a superconducting and a ferromagnetic lead with a precessing magnetization due to ferromagnetic resonance. We find that the magnetization precession induces a subgap dc current even in the absence of a bias voltage. This effect is due to the rectification of the ac spin currents at the interface with the ferromagnet; it exists in the absence of spin currents in the superconductor. Interestingly, when the dot is strongly coupled to the superconductor, the induced current is strongly enhanced (as compared to the normal state) in a wide range of parameters.