SFB/TRR 21 - Kolloquium
18. Mai 2007, Tübingen

Dr. Stefan Scheel
(Imperial College London)

Atomic spin relaxation near superconducting surfaces and carbon nanotubes

In this seminar, I will discuss some aspects of atomic relaxation processes near superconducting surfaces. I will present our theoretical results regarding spin flip lifetimes near bulk superconductors using three different superconductivity models (two-fluid model, BCS theory, Eliashberg theory). For two-dimensional superconducting films, bulk losses are negligible and vortex flux noise may become relevant. I will discuss the implications of this noise source for relaxation times of atomic Zeeman sublevels. Finally, I will present our results on trapping lifetimes near carbon nanotubes and discuss the influence of dispersion forces.

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Universität Tübingen, Raum D4A19
Auf der Morgenstelle 14, 72076 Tübingen

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