

SFB 608

Einladung zum Kolloquium

- Ort:** Universität zu Köln
II. Physikalisches Institut, Seminarraum 201
- Zeit:** 29. Juni 2005, 14 Uhr c.t.
- Sprecher:** Dr. Andreas Läuchli
IRRMA - SB - EPFL
Lausanne, Switzerland
- Thema:** Unconventional Charge Dynamics in Doped Frustrated Magnets

Doped frustrated quantum magnets fostered a lot of interest in the last few years, notably due to the recent discovery of superconductivity in such compounds (Cobaltites -> triangular lattice, Osmium / Rhenium oxides -> pyrochlore lattice) or the heavy fermion character of LiV_2O_4 . As an example we study here numerically and analytically the two-dimensional kagome lattice for different doping levels in the framework of the t-J model. Some rather unconventional phenomena are found: there are no well defined quasiparticles for the single hole problem, we rather find spin-charge separation; two or more holes repel each other, therefore no real-space binding is present. Finally at the commensurate doping one-third we detect an insulating, symmetry-breaking state involving local singlet formation. This instability seems to be more general, as we also find it to occur on the checkerboard and the pyrochlore lattice at certain dopings.

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