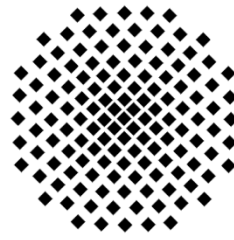


# Stuttgarter Physikalisches Kolloquium

Fachbereich Physik, Universität Stuttgart  
Max-Planck-Institut für Festkörperforschung  
Max-Planck-Institut für Intelligente Systeme

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Dienstag, 15. Juli 2014

17:15 Uhr

Hörsaal V 57.01

Universität Stuttgart, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen

Gastgeber: Prof. Alejandro Muramatsu, Universität Stuttgart, Telefon: 0711 - 685-65204

## Towards computational design of correlated materials

Roser Valenti  
Goethe-Universität Frankfurt

### Abstract

Unconventional superconductivity with high critical temperatures, frustrated magnetism, spin liquid behavior, colossal magnetoresistance, heavy fermions are a few examples of exotic phases in correlated materials. In a correlated system electrons experience strong Coulomb repulsion and one of the big challenges in solid state physics is the microscopic description of such systems. Moreover, being able to understand these materials implies the possibility of designing compounds with desirable properties.

In this talk I will review the world of some families of correlated materials ranging from unconventional superconductors, frustrated magnets and possible correlated Dirac metals and will present some strategies on how to model them microscopically.