PAUL SCHERRER INSTITUT

# PSI facilities newsletter

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http://www.psi.ch/info/facility-news

## Announcement

### JUM@P'13: Third Joint Users' Meeting @ PSI

The next users' meeting from the **JUM@P** series will be held at PSI on **September 18-20, 2013**. The first day of the meeting will consist of a plenary session with keynote and invited lectures as well as information about PSI and its user facilities. The second day is reserved for topical parallel workshops, poster sessions, and a tour through the PSI user facilities. The award of the second PSI thesis medal will conclude the meeting.
http://indico.psi.ch//event/jump13.

### 2013 PSI Summer School on Condensed Matter Research - August 17-23 / Lyceum Alpinum, Zuoz, Switzerland

This year, the Condensed Matter Research summer school is dedicated to one of the main topics addressed at large-scale synchrotron, neutron and muon user facilities: materials structure and magnetism. Following the school, a practical training is offered at PSI (August 24-26). The number of participants is limited, but the training will provide hands-on experience with each of the state-of-the-art user facilities. http://www.psi.ch/summerschool

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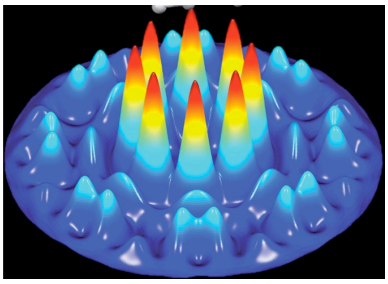
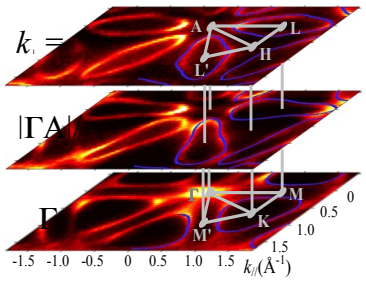
## Research highlights



### Molecular magnets: Lord of the rings

***C. Rüegg, Nature Physics 8, 859 (2012)***

Magnets built of molecular rings of magnetic ions are fundamental model systems for studying the complex correlations and dynamics of quantum spins at the atomic scale. A new generation of neutron spectrometers can reveal complete four-dimensional maps of the spin correlations in spin rings. http://www.psi.ch/num/2012.




### Three-dimensional electron realm in crystalline solids revealed with soft-X-rays

***V.N. Strocov et al., Physical Review Letters 109 (2012) 086401 / DOI: 10.1103/PhysRevLett.109.086401***

The wave nature of electrons enables them to propagate by atoms in a periodic crystal lattice without scattering onto them. Further, the cornerstone of the quantum theory of crystalline solids is the dependence of the energy, *E*, of electrons on their wave-vector, **k,** adapted to a periodic media that forms their band structure, *E*(**k**). In particular, it answers the question why some materials are metals and others are insulators. The main experimental method to investigate *E*(**k**) is angle-resolved photoelectron spectroscopy (ARPES), and it is based on the photoelectric effect. Typical applications of this technique have so far been largely restricted to two-dimensional crystals such as high temperature superconductors. Now, scientists from the Swiss Light Source (SLS) at the PSI have extended the ARPES technique to three-dimensional crystalline systems by using soft-X-rays with photon energies around 1 keV. http://www.psi.ch/sls/scientific-highlights.