

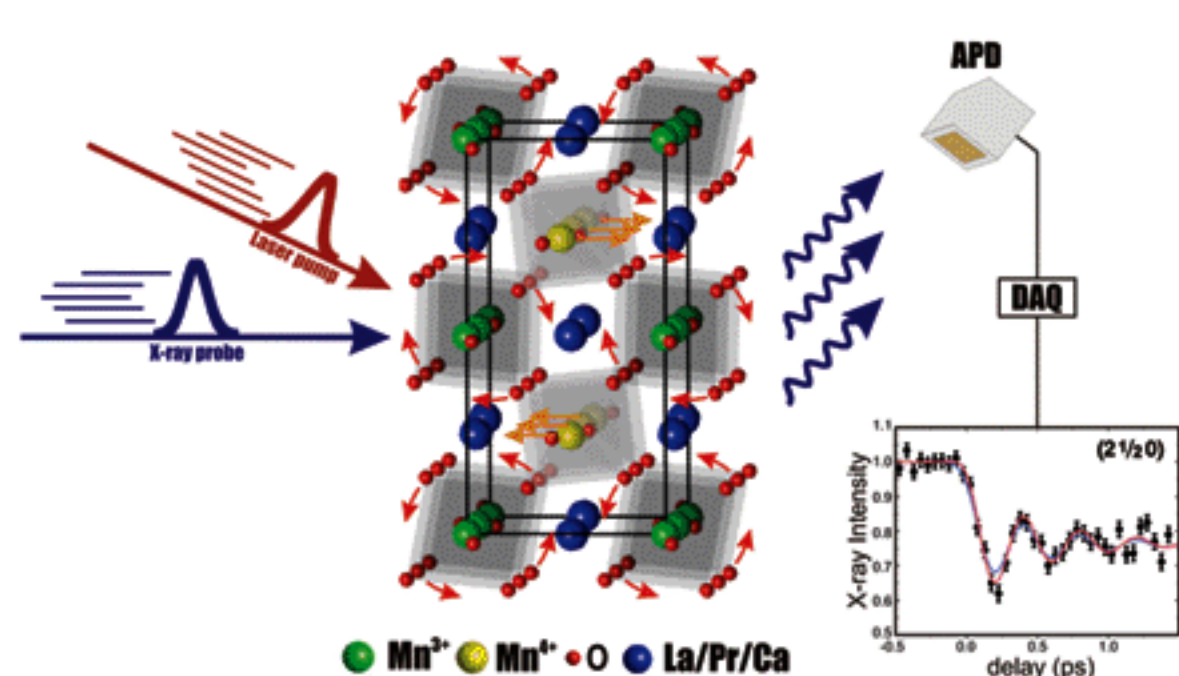
Announcement

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>.

Research highlights



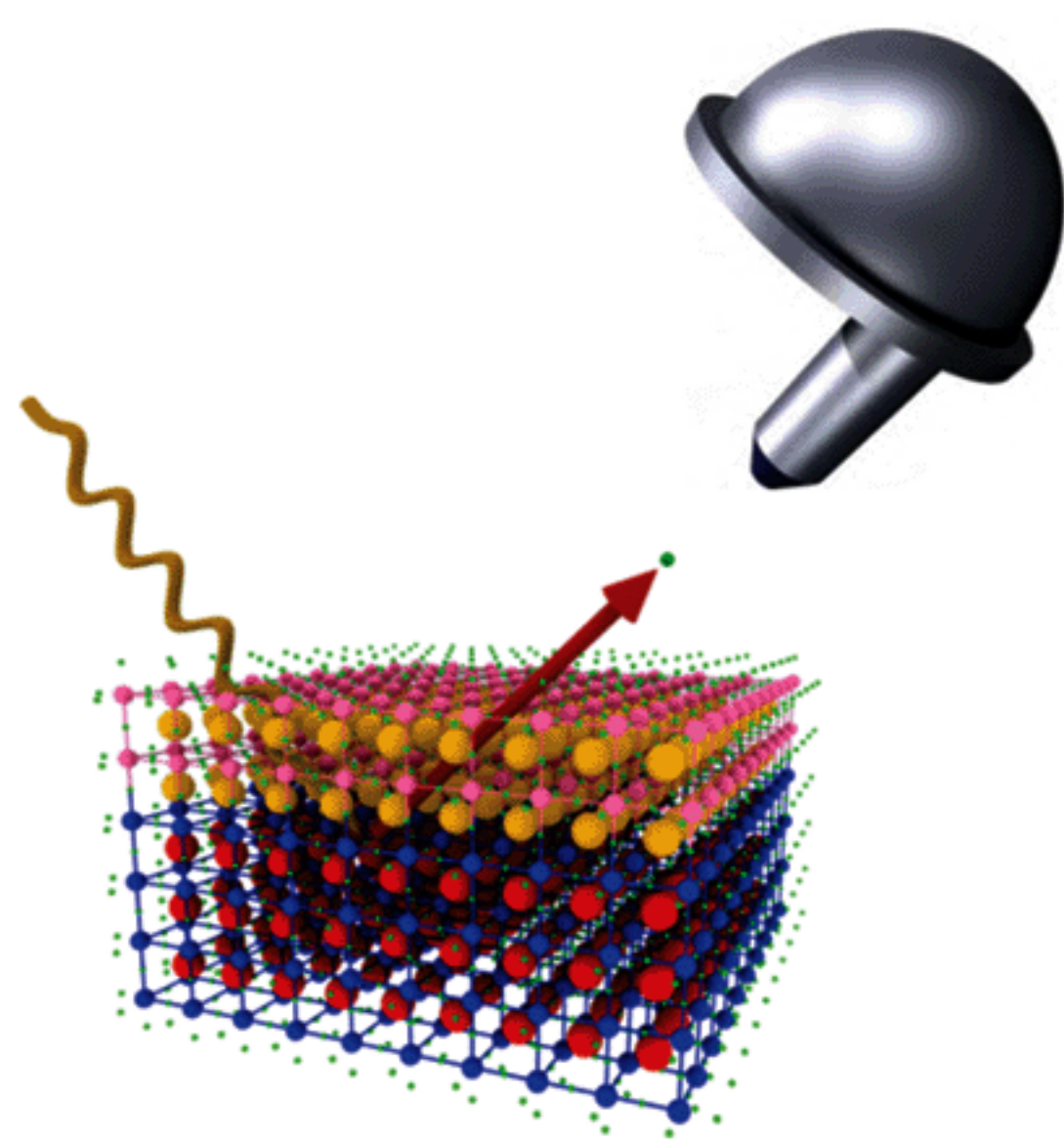
Atomic motions untangled

Caviezel et al, PHYSICAL REVIEW B 87, 205104 (2013),

DOI: 10.1103/PhysRevB.87.205104

The pursuit of capturing motion in a movie bears an obvious fascination irrespective of the time scales involved. In the atomic and molecular world where the masses are so light and the distances small the relevant time scale shifts to the

sub-picosecond range and the motions become frantic especially for larger molecular systems. In the material class of strongly correlated electron materials the intricate balance of competing structural, magnetic and charge interactions complicates the picture when it comes down to disentangle the coupled processes. In order to advance the understanding of the underlying correlations in these materials current efforts focus on the interaction of the atomic, electronic, and magnetic subsystems on their relevant time scales. Here, we study specific lattice modulations coupled to the melting of charge and orbital order in a manganite by means of femtosecond x-ray diffraction. By using a carefully chosen set of reflections combined with structure factor calculations we are able to identify the involved atomic motions. <http://www.psi.ch/sls/scientific-highlights>.



Soft x-ray photoelectron spectroscopy on buried complex oxide interfaces: a new method to diagnose authentic protected electronic structures

C. Cancellieri et al, Phys. Rev. Lett. 110, 137601 (2013),

DOI: 10.1103/PhysRevLett.110.137601

Exotic phenomena at interfaces of complex oxides are highly promising for future solid-state electronics applications. A prominent example is the interface of two wide band gap insulators formed by growing a LaAlO₃ layer on TiO₂-terminated SrTiO₃ substrate. When the LaAlO₃ thickness exceeds 3 unit cells this system undergoes a sharp insulator-to-metal transition with a two-dimensional electron gas

(2DEG) appearing at the interface. A team of scientists from the Paul Scherrer Institute and University of Geneva, Switzerland, has for the first time unambiguously directly detected the 2DEG signal at the Fermi level with its sharp onset between the insulating and conducting interfaces. <http://www.psi.ch/sls/scientific-highlights>.