

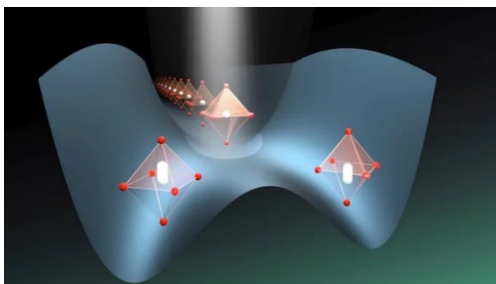
SwissFEL & SLS - Fundamentally different



Large research facilities at PSI such as the X-ray free-electron laser SwissFEL and the Swiss Light Source SLS – especially after the upgrade SLS 2.0 – deliver unimaginably vast amounts of data. Artificial intelligence is helping to evaluate data efficiently and exploit the facilities' full potential for research.

Read more: <https://www.psi.ch/en/news/psi-stories/fundamentally-different>

SwissFEL - Short x-ray pulses reveal the source of light-induced ferroelectricity



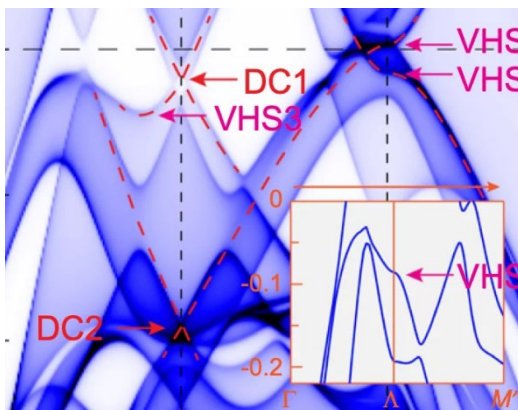
Terahertz laser pulses are a powerful tool for manipulating the properties of quantum materials through tailored modifications of their crystal structure. Light-induced ferroelectricity in SrTiO₃ is a remarkable demonstration of such physics. Under mid-infrared illumination, this material transforms into a state of permanently ordered electric dipoles, which are absent from its equilibrium phase diagram. In order to identify the intrinsic interactions relevant for the creation of this state, an international team

of researchers performed an experiment at the Bernina beamline of the SwissFEL in which the main new insight was obtained not by detecting the positions of the atoms, but by measuring the fluctuations around these atomic positions.

Read more: <https://www.psi.ch/en/bernina-group/scientific-highlights/short-x-ray-pulses-reveal-the-source-of-light-induced>

M. Fechner et al, *Nature Materials* 23, 363 (2024)

SLS - Phonon promoted charge density wave in topological kagome metal ScV6Sn6



Charge density wave (CDW) orders in vanadium-based kagome metals have recently received tremendous attention, yet their origin remains a topic of debate. The discovery of ScV₆Sn₆, a bilayer kagome metal featuring an intriguing $\sqrt{3} \times \sqrt{3} \times \sqrt{3}$ CDW order, offers a novel platform to explore the underlying mechanism behind the unconventional CDW.

Read more: <https://www.psi.ch/en/specqm/scientific-highlights/phonon-promoted-charge-density-wave-in-topological-kagome-metal>

Y. Hu et al, *Nature Communications* 15, 1658 (2024)