

Laser Seminar / NCCR MUST Seminar

Monday, April 4, 2016

Time	16.45
Location	ETH Zurich, Hönggerberg, HPF G6
Speaker	Christian Rüegg, Head of Laboratory for Neutron Scattering and Imaging (LNS), Paul Scherrer-Institute, Villigen, Switzerland
Title	Quantum Magnets and Criticality in and out of Equilibrium
Abstract	<p>Magnets are exceptional solid-state systems for high-precision studies of fundamental collective quantum phenomena in many-body physics like Bose-Einstein condensates, Tomonaga-Luttinger liquids and quantum criticality^[1,2]. Further examples include complex ground states and correlations realized in low-dimensional and frustrated magnetic systems^[3-7], exciting physics of impurities and quenched disorder^[8], and dramatic events near quantum phase transitions^[9]. In this laser seminar studies of model magnets mainly by neutron scattering will be presented with special attention to systematic control of Hamiltonians and quantum correlations by pressure, magnetic field, and chemical composition. These results on model magnets in equilibrium enable fundamentally new studies by (free electron) lasers of their ultra-fast dynamics and of out-of-equilibrium properties of quantum systems. The results will be discussed in the context of recent developments in computational physics and neutron, X-ray and laser spectroscopy.</p> <p>[1] T. Giamarchi et al., Nature Physics 4, 198 (2008). [2] B. Thielemann et al., Phys. Rev. Lett. 102, 107204 (2009). [3] Y. Kohama et al., Phys. Rev. Lett. 109, 167204 (2012). [4] F. Casola et al., Phys. Rev. Lett. 110, 187201 (2013). [5] M. Mena et al., Phys. Rev. Lett. 113, 047202 (2014). [6] M.E. Zayed et al., Phys. Rev. Lett. 113, 067201 (2014). [7] K.W. Plumb et al., Nature Physics 12, 224 (2016). [8] S. Ward et al., J. Phys.: Condens. Matter 25, 014004 (2013). [9] P. Merchant et al., Nature Physics 10, 373 (2014).</p>
Hosts	Ursula Keller, Ultrafast Laser Physics, IQE and Steve Johnson, Ultrafast Dynamics, IQE
More Info	http://www.opteth.ethz.ch/news/laser_seminar



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