



Physical Phenomena at High Magnetic Fields

VI

Laulasmaa Resort, Estonia August 1-6, 2008

August 8, 2008

REPORT

The **Sixth Conference on Physical Phenomena in High Magnetic Fields** (PPHMF-VI) was held August 1st through 6th at the Laulasmaa Resort near Tallinn, Estonia. Following the tradition from the [PPHMF-V conference](#) in Tallahassee, which was a satellite to LT-24 in Orlando, this summer's conference was a satellite of the LT-25 (<http://www.lt25.nl/>) held August 6th through 13th in Amsterdam and Leiden.

Following the format of the very successful PPHMF conferences at the U.S. National High Magnetic Field Laboratory, the PPHMF-VI featured talks chosen for scientific excellence from areas of research that now involve *or could in the future involve* high magnetic fields. There will be no conference proceedings to encourage the presentation of the latest results. Additional information on PPHMF-VI can be found on the conference webpage at: <http://pphmf6.edu.ee/>

A total of 57 colleagues participated in the workshop with an additional 10 from Estonia in selected sessions. Participants came from all over Europe (United Kingdom, France, Germany, Netherlands, Hungary), the USA, Canada, and Japan. About 50% of the participants were students and young postdocs.

The workshop program consisted of the plenary lecture by Gabriel Aeppli (LNC, London) and 39 contributed talks, plus additional 8 poster contributions. Thematically about 50% of the contributions addressed more technical issues and modern developments at high magnetic field facilities over the globe, while the other 50% concerned pressing issues and new results in strongly correlated electron systems. Most interesting contributions focused on specific instrumentation for the study of strongly correlated electron systems at ANL (Isaacs), and novel techniques of various kinds used at magnet labs (Boebinger). The scientific reviews were dedicated to developments on ESR (van Tol), frustrated magnets (Penc) and finally on recent progress in the phase diagram of YBCO (Bonn). All reviews were of very high standard and extremely worthwhile. All contributed talks were also on a very high level, covering an exciting variety of aspects of high magnetic fields and/or the physics of strongly correlated electron systems.

The ESF-HFM support was used to invite 7 speakers (marked red in final scientific program) with intention to cover in conference program various topics from the highly frustrated magnetism area.

In summary, the organizers were left with the impression, that the participants of the workshop very much appreciated the topics covered by the speakers and the high quality of the presentations. We noticed great interest in the novel technical aspects adopted at various high magnetic field laboratories as well as the new developments in strongly correlated electron systems. We feel that the workshop was quite successful and we consider to organize a similar event again in the next couple of years.

Raivo Stern, Director, National Institute of Chemical Physics & Biophysics, Tallinn, Estonia,
Co-Chairman of the PPHMF-VI.

FINAL SCIENTIFIC PROGRAM:

Saturday, August 2

OPENING REMARKS		
9:00	Welcome	
Phases I		
9:25	Moessner, Roderich	PH 1.1 Magnetic Monopoles in Spin Ice
10:00	BREAK	
10:30	Rost, Andreas	PH 1.2 Magnetocaloric Effect and Specific Heat of Sr ₃ Ru ₂ O ₇
11:05	Sheikin, Ilya	PH 1.3 Field-induced Re-entrant Superconductivity in Ferromagnetic URhGe
11:40	Hussey, Nigel	PH 1.4 Anomalous 'Criticality' in Overdoped Cuprates
12:15	LUNCH	
13:45	Poster Presenters I	Poster Advertisements ca 'a 6+2 minutes each
Charge I		
14:20	Ohta, Hitoshi	CH 1.1 Magneto-photoluminescence Measurement on Er,O-codoped GaAs under a pulsed Magnetic Field up to 55 T
14:55	Kimata, Motoi	CH 1.2 Large Negative Magnetoresistance and High Field ESR Measurements of One-dimensional Fe-Phthalocyanine Conductor
15:30	BREAK	
Spin I		
16:00	van Benthum, Jan	SP 1.1 General Purpose 1D and 2D NMR in Resistive Magnets
16:35	Horvatic, Mladen	SP 1.2 New NMR Insights in Quantum Spin Systems: SrCu ₂ (BO ₃) ₂ and CuBr ₄ (C ₅ H ₁₂ N) ₂
17:10	Cox, Susan	SP 1.3 Determining the Spatial and Spin Anisotropy of Copper-based Quasi-two-dimensional Heisenberg Magnets via High Magnetic Fields and Electron Paramagnetic Resonance
17:45	Vachon, Marc-Andre	SP 1.4 Elementary Excitations in the Spin Liquid Phase of Cs ₂ CuCl ₄ as revealed by ¹³³ Cs NMR Spin-lattice Relaxation Rate Measurements
18:20	END OF SESSION	

Sunday, August 3

SupCon I		
8:15	Proust, Cyril	SC 1.1 Fermi Surface of Cuprates revealed by Quantum Oscillations and Hall Effect
8:50	Yelland, Ed	SC 1.2 Quantum Oscillations in the underdoped Cuprate YBa ₂ Cu ₄ O ₈
9:25	Bonn, Doug	SC 1.3 Recent Progress in the Phase Diagram of YBCO
10:00	BREAK	
Organics		
10:30	Uji, Shinya	OR 1.1 Calorimetric Measurements of One-dimensional Organic Conductor (TMTSF) ₂ ClO ₄ in High Magnetic Fields up to 35 T

11:05	Goddard, Paul	OR 1.2 Isotope Effect in Quasi-two-dimensional Metal-organic Antiferromagnets
11:40	Ardavan, Arzhang	OR 1.3 Fluctuating Superconductivity in Organic Molecular Metals close to the Mott Transition
12:15	LUNCH	
	Nanoscale	
13:45	Hirjibehedin, Cyrus	NS 1.1 Spin-Excitation Spectroscopy: Probing Magnetic Nanostructures at the Atomic Scale
14:20	Brinkman, Alexander	NS 1.2 Magnetoresistance Oscillations and Relaxation Effects at the SrTiO ₃ – LaAlO ₃ Interface
14:55	Heutz, Sandrine	NS 1.3 Magnetism in Molecular Thin Films
15:30	BREAK	
	Spin II	
16:00	Zapf, Vivien	SP 2.1 Magnetically-induced Electric Polarization in an Organic Quantum Magnet
16:35	Zheng, Guo-Qing	SP 2.2 NMR Study on Transition-Metal-Oxide Superconductors under Static and pulsed High Magnetic Fields up to 48 T
17:10	Brown, Stuart	SP 2.3 High NMR Studies of the frustrated Spin Dimer Compound Ba ₃ Mn ₂ O ₈
17:45	END OF SESSION	
17:45-19:15	Poster Session	
20:00	Outreach: Physics Theatre	

Monday, August 4

	PLENARY TALK	
8:15	Aeppli, Gabriel	PLEN High Field Magnets, other Big Machines and Science
	High-field EPR I	
8:50	Freed, Jack	ER 1.1 High Field ESR Studies of Protein Dynamics
9:25	Barra, Anne-Laure	ER 1.2 HF-EPR for the Study of Single-Molecule Magnets Anisotropy
10:00	BREAK	
	Spin III	
10:30	Kraemer, Steffen	SP 3.1 High-field NMR Studies of the modulated BEC in BaCuSi ₂ O ₆ and the Frustration Driven Magnetization Plateau of Cu ₃ (CO ₃) ₂ (OH) ₂
11:05	Zvyagin, Sergei	SP 3.2 Spin Dynamics in the BEC Candidate DTN studied by High-field ESR
11:40	Sengupta, Pinaki	SP 3.3 Field-induced Spin Supersolid Phase in Heisenberg Antiferromagnets
12:15	LUNCH	
	High-field EPR II	
13:45	Keeble, David	ER 2.1 High Frequency High Power pulsed Electron Magnetic Resonance (HIPER); Applications from Biophysics to Spintronics
14:20	Wylde, Richard	ER 2.2 Engineering Physics: The Ideas behind HiPER, a 94 GHz ESR Spectrometer with Nanosecond $\pi/2$ Pulses and Dead-times
14:55	van Tol, Hans	ER 2.3 Pulsed EPR at 240 GHz and 336 GHz and the Progress towards a Free Electron Laser Pulsed EPR Spectrometer
15:30	BREAK	
	Emerging Techniques	
16:00	Zherlitsyn, Sergei	ET 1 Ultrasound at High Magnetic Fields: First Scientific Results at the HLD

16:35	Doerr, Mathias	ET 2 Investigations of Magnetostriction of Solids in High Magnetic Fields - an Overview
17:10	Wosnitza, Jochen	ET 3 Science and Infrastructure at the New Dresden High Magnetic Field Laboratory
17:45	END OF SESSION	

Tuesday, August 5

8:15	Poster Presenters II	Poster Advertisements ca 'a 6+2 minutes each
	SupCon II	
8:50	Sebastian, Suchitra	SC 2.1 Where do the Carriers Really lie? Multiple Fermi Surface Pockets and underlying Modulated Magnetic Order in the underdoped High Tc Superconductor YBa ₂ Cu ₃ O _{6.51}
9:25	Boebinger, Greg	SC 2.2 Specific Heat of High-Temperature superconducting Cuprates to 45T: Nodal Quasiparticle density of States and Quantum Oscillations
10:00	BREAK	
	X-Rays and Neutrons	
10:30	Isaacs, Eric	XN 1 Slow Dynamics in an Antiferromagnet using Coherent X-rays
11:05	Yoshii, Shunsuke	XN 2 Neutron Diffraction Experiment on the Shastry-Sutherland System TbB ₄ under pulsed High Magnetic Fields
11:40	Penc, Karlo	TH 1 Frustration in Heisenberg Systems
12:15	LUNCH	
13:45	Parish, Meera	TH 2 Magnetotransport in classical Inhomogeneous Media
14:20	Boebinger, Greg	Conf. Summary
15:00	END OF CONFERENCE	