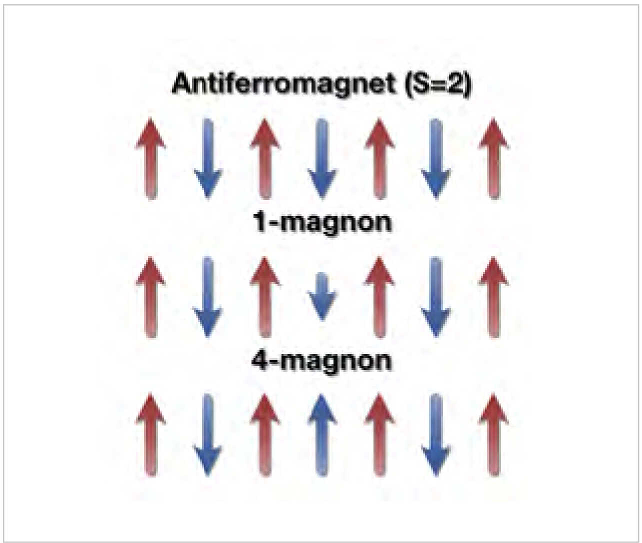
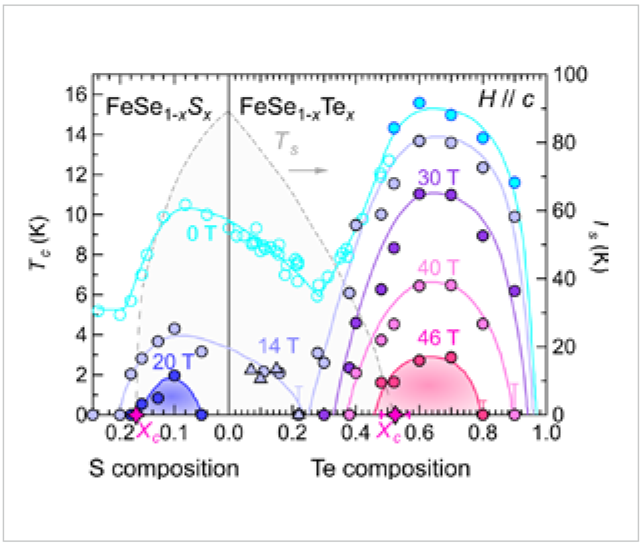
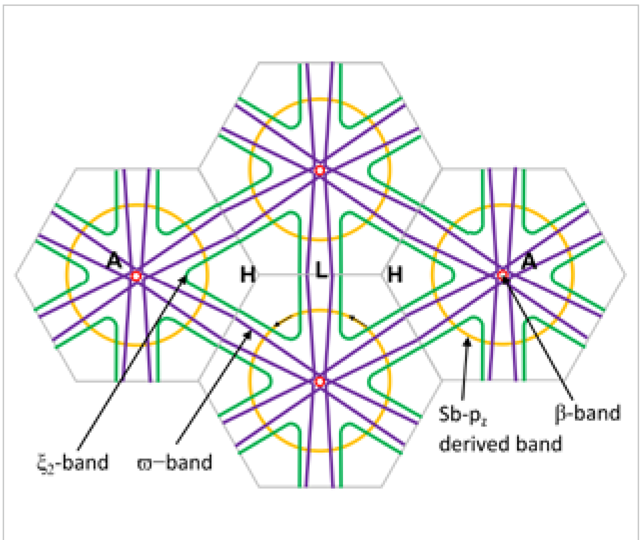
European Magnetic Field Laboratory

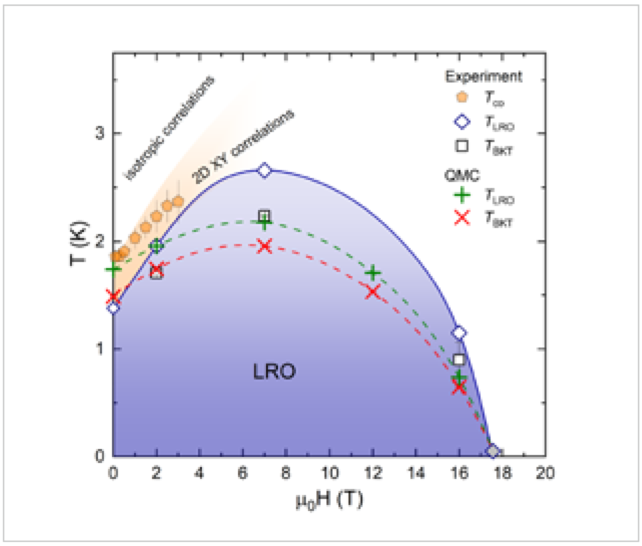
EMFLNEWS

N°1 2023









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DEAR READER

This EMFLNews will offer you a comprehensive overview of EMFL's activities during the current trimester.

We are pleased to announce that the user meeting will take place mid-June in Nijmegen. This event will be open to everyone, with both in-person and online participation options available. We encourage you to follow our announcements and register for this exciting opportunity. Furthermore, the EMFL prize winner will be announced during the meeting. We also want to remind you that the user survey for the development roadmap of new magnets is still open. We highly value your contributions and appreciate your input towards the future of our organization. A dedicated discussion will take place during the user meeting as part of the European-funded project ISABEL.

A new call for experiments has been opened for the second half of 2023, with a fast-track online submission procedure available for faster processing.

Following the challenges of COVID-19 in 2021 and 2022, we are delighted to announce that there are currently no travel restrictions in place for running experiments in EMFL laboratories in 2023. Despite the ongoing electric energy challenges in continuous field facilities (Grenoble and Nijmegen), our stakeholders have provided enough budget to ensure high magnetic field science can continue at a „normal" level. This is excellent news for our users. We are also actively working on strong programs for energy efficiency in our laboratories.

We are committed to providing our users with the magnetic fields they need in the coming years and are confident that our organization will continue to play a crucial role in high magnetic field science.

We wish you all the best in your high magnetic field research.

Charles Simon
Director LNCMI
Chairman EMFL

MEET OUR PEOPLE

Britta Redlich, HFML-FELIX

Since the beginning of 2023, I have been appointed as acting director of HFML and I am now leading the HFML-FELIX laboratory in Nijmegen. Though it came unexpected at this point in time, it feels as a natural extension of our common engagement and vision developed over the last years.

I started my career at the University of Hannover, where I studied chemistry and specialized in the direction of physical chemistry. During my PhD, I worked in the field of surface science and investigated the properties of monolayers on insulating surfaces most importantly using infrared spectroscopy. There, I discovered my affinity to large instrumentation and after my PhD, I started as a post-doc at the University of Münster connected to research at the Dutch Free Electron Laser FELIX; at that time still at the FOM Institute Rijnhuizen close to Utrecht. As staff scientist and facility manager, I was heavily involved in the relocation of FELIX to Radboud University. In Nijmegen, I very much enjoy the setting, where our unique large-scale facilities are embedded in the inspiring academic climate of the university. I am driven by the motivation to develop unique instrumentation that allows us to make discoveries in many scientific areas that would not be possible otherwise. The development of our vision and strategy is key and together we make it work with our national and international partners. Here, EMFL has a central role and through my involvement in European networks such as LEAPS and ARIE, I have been able to follow EMFL closely. In my free time, I am enjoying walks in the nature and running around the village where I live, hiking and skiing in the mountains and traveling.

For the future, I am looking forward to joining EMFL and further developing the collaboration. I hope to meet many of you during the EMFL user meeting taking place in June in Nijmegen and to visit the other EMFL sites soon!

Britta Redlich

HIGH-ANGULAR MOMENTUM EXCITATIONS IN THE COLLINEAR ANTIFERROMAGNET $FePS_3$

Jan Wyzula and Milan Orlita, University of Fribourg and LNCMI Grenoble

Magnons, or quantized spin waves, are collective magnetic excitations in solids. These boson-like quasiparticles disperse with lattice momentum k, carry a fixed energy, and possess an integer spin or angular momentum $S_z = \pm 1$. Although magnons are optically active, only spatially uniform spin waves can be excited due to the vanishing momentum of photons (k = 0 magnons). Despite their quantum nature, the optical and magneto-optical response of magnons can be approached semiclassically as transverse precession of coupled magnetic moments. In antiferromagnets, the associated resonant absorption of light is referred to as antiferromagnetic resonance (AFMR).

AFMR has a particularly simple form in antiferromagnets with uniaxial anisotropy: a single mode that is also often referred to as one-magnon excitation. When the magnetic field is applied, this mode splits into two branches linear in B: $\omega_{AF} = \omega_{AF}^0 \pm \Upsilon B$, where Υ stands for the gyromagnetic ratio. The branches are, thus, separated by twice the Larmor frequency, or equivalently, twice the Zeeman energy, $2E_z = 2g\mu_B B$, with the g-factor typically close to the free-electron value (g = 2). Such behavior was observed in a number of antiferromagnets.

Recently, we performed AFMR experiments on the uniaxial antiferromagnet $FePS_3$ in a collaboration of researchers from Grenoble, Fribourg, Prague, and Warsaw. This material belongs to a topical family of magnetic van-der-Waals systems and the magnetic order is, in this case, induced by large-spin (S = 2) magnetic moments of iron Fe^{2+} ions that are arranged in a hexagonal lattice. Nevertheless, the observed AFMR response is more complex than expected. In addition to the conventional AFMR mode, or in other words, in addition to the one-magnon excitation (Figure 1a), another AFMR-like feature appears in the spectra. On a qualitative level, the additional mode resembles an AFMR. However, it displays a four-times larger splitting of the branches (Figure 1b). This excitation corresponds to a full reversal of a single spin S = 2 (Figure 1c), which carries a total angular momentum of $|S_z| = 4$.

Our observation extends the concept of single-ion bound states, so far limited to two-magnon single-ion bound states in S = 1 systems, towards more complex excitations with multipolar symmetry. In particular, for S = 2 magnetic materials, their condensation in a magnetic field may allow for exotic hexadecapole phases. Overall, our findings illustrate the emergence of exotic quantum excitations in semiclassical magnetic materials with large spins.

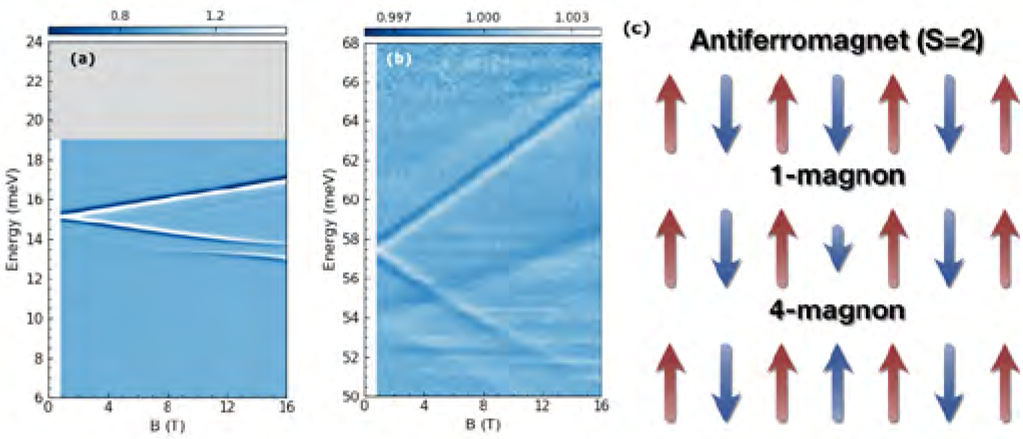

Figure 1: Differential magneto-transmission spectra with one-magnon and four-magnon excitations, in (a) and (b), respectively. (c) Schematic representation of a large-spin antiferromagnet with one-magnon and four-magnon excitations.

High-Angular Momentum Excitations in Collinear Antiferromagnet $FePS_3$, J. Wyzula, I. Mohelský, D. Václavková, P. Kapuscinski, M. Veis, C. Faugeras, M. Potemski, M. E. Zhitomirsky, and M. Orlita, Nano Lett. **22**, 9741 (2022).

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ENHANCED SUPERCONDUCTING PAIRING STRENGTH NEAR A PURE NEMATIC QUANTUM CRITICAL POINT

Matija Čulo, Institute of Physics, Zagreb, Croatia and Nigel Hussey, HFML and University of Bristol, UK

High-temperature superconductivity is one of the biggest unsolved problems in condensed-matter physics, due to its unconventional superconducting (SC) pairing mechanism, which goes beyond the standard electron-phonon interaction. Many materials with such an unconventional SC state commonly host an additional antiferromagnetic (AFM) phase that competes and/or coexists with the SC state. Interestingly, the SC transition temperature T_c is very often enhanced in the part of the phase diagram where this AFM phase transition is suppressed down to zero temperature, i.e., in vicinity of an AFM quantum critical point (QCP). Such a correlation has led to a strong belief that AFM quantum critical fluctuations play a decisive role in the SC pairing of unconventional superconductors.

Researchers from HFML for the first time showed that a similar enhancement of T_c occurs also in vicinity of a pure nematic QCP. This research is a result of an intensive collaboration between HFML, University of Tokyo, University of Bristol, and the Institute of Physics (Zagreb, Croatia), the latter being strengthened through a recently EMFL-funded secondment of Matija Čulo. The study was conducted on iron-based superconductors $FeSe_{1-x}S_x$ and $FeSe_{1-x}Te_x$, which are unique in the sense that superconductivity emerges from a pure electron nematic phase – a peculiar state that breaks the rotational symmetry while preserving the translational symmetry of a material. T_c values for $FeSe_{1-x}S_x$ and $FeSe_{1-x}Te_x$ were determined from electric-resistivity measurements in high magnetic fields up to 35 T (HFML-EMFL) and 60 T (University of Tokyo), respectively.

From such determined T_c, the researchers successfully constructed a combined T_c vs. x phase diagram of $FeSe_{1-x}S_x$ and $FeSe_{1-x}Te_x$, for different field strengths (see Figure). For zero field, T_c stays finite in the whole measured x range, with no obvious enhancement at the respective nematic QCPs (x_c = 0.16 and 0.50 for $FeSe_{1-x}S_x$ and $FeSe_{1-x}Te_x$). Due to such behavior, it had long been believed that, in contrast to the AFM QCP, the nematic QCP has little or no influence on superconductivity in $FeSe_{1-x}S_x$ and $FeSe_{1-x}Te_x$. Our measurements, however, showed that the application of high magnetic field causes a suppression of T_c in such a way that two distinct SC domes emerge, the one for $FeSe_{1-x}Te_x$ being centered at $x_c \approx 0.50$, exactly where the nematic QCP occurs. Such behavior indicates that, in contrast to previous expectations, nematic quantum critical fluctuations may indeed play a dominant role in the SC pairing mechanism in $FeSe_{1-x}Te_x$, opening a nematic route to high-temperature superconductivity.

Enhanced Superconducting Pairing Strength near a Pure Nematic Quantum Critical Point, K. Mukasa, K. Ishida, S. Imajo, M. Qiu, M. Saito, K. Matsuura, Y. Sugimura, S. Liu, Y. Uezono, T. Otsuka, M. Čulo, S. Kasahara, Y. Matsuda, N. E. Hussey, T. Watanabe, K. Kindo, and T. Shibauchi, Phys. Rev. X **13**, 011032 (2023).

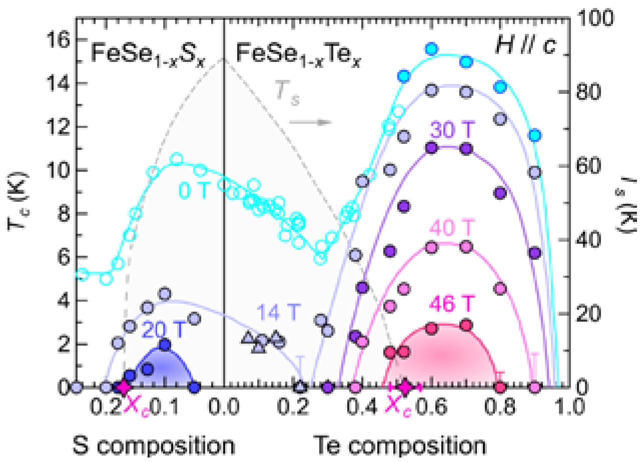

Figure: Combined T_c vs. x phase diagram for $FeSe_{1-x}S_x$ and $FeSe_{1-x}Te_x$ for different values of magnetic field H. T_c values are indicated by symbols (left axis), the nematic transition temperature T_s by the grey dashed line (right axis) and the nematic QCPs by the pink stars.

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MAGNETIC BREAKDOWN AND TOPOLOGY IN THE KAGOME SUPERCONDUCTOR CsV_3Sb_5

Ramakanta Chapai, J. F. Mitchell and Ulrich Welp, Argonne National Laboratory, Vincent Oliviero, Maxime Leroux, LNCMI Toulouse

The recently discovered-kagome lattice compounds AV_3Sb_5 (A = K, Rb, Cs) show a fascinating interplay of superconductivity, charge density wave (CDW) order, and nontrivial topology of the electronic band structure. The CDW order itself is unconventional due to the presence of chiral charge order and time-reversal symmetry breaking inducing a large anomalous Hall effect and non-reciprocal transport. The transition into the CDW state is accompanied by an extensive reconstruction of the Fermi surface. While angle-resolved photo-emission spectroscopy (ARPES) has been invaluable in exploring the electronic structure, effects due to matrix elements have largely precluded the visualization of the reconstructed band structure. In contrast, quantum oscillations are a direct manifestation of the Fermi surface and can reveal information on the quasiparticle effective masses, their lifetimes, and their topological state.

Now, a research collaboration between Argonne National Laboratory, Hofstra University, and LNCMI-Toulouse has performed quantum-oscillation measurements on high-quality single crystals of CsV_3Sb_5 using the tunnel diode oscillator technique in fields up to 86 T. The high-field data reveal a sequence of magnetic-breakdown orbits that allow us to construct a model for the folded Fermi surface of CsV_3Sb_5, shown in Figure 1a.

The dominant features are large triangular Fermi-surface sheets that cover almost half of the folded Brillouin zone highlighted in Figure 1b in magenta ($\bar{\omega}$ band with a frequency of 1943 T) and green (ξ_2 band at 804 T). These orbits form the 'building blocks' that combine one-by-one to form a series of approximately equally spaced frequencies that dominate the high-field oscillation spectrum as shown in Figure 1c. Notably, these Fermi-surface sheets have not yet been detected in ARPES. In addition to mapping this folded Fermi surface, we have extracted the Berry phases of the electron orbits from Landau-level fan diagrams near the quantum limit without the need for extrapolations, thereby unambiguously establishing the non-trivial topological character of several electron bands in this kagome-lattice superconductor.

Magnetic breakdown and topology in the Kagome superconductor CsV_3Sb_5 under high magnetic field, R. Chapai, M. Leroux, V. Oliviero, D. Vignolles, N. Bruyant, M. P. Smylie, D. Y. Chung, M. G. Kanatzidis, W.-K. Kwok, J. F. Mitchell, and U. Welp, Phys. Rev. Lett. **130**, 126401 (2023).

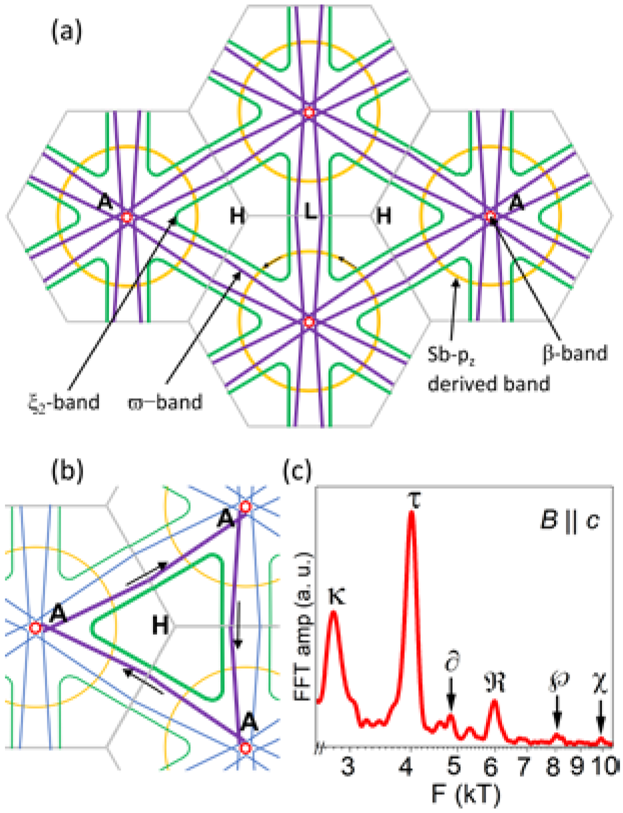

Figure1: (a) Schematic of the 2x2 reconstructed Fermi surface of CsV_3Sb_5 for $k_z = \pm\pi/c$ in repeated zones. Capital letters refer to Brillouin zone points. (b) Enlarged schematic of the ξ_2 and $\bar{\omega}$ orbits. (c) High-frequency section of the oscillation spectrum at 1.5 K on a log field scale. The κ orbit corresponds to the sum of the ξ_2 and $\bar{\omega}$ orbits, while the τ orbit represents two basic triangular $\bar{\omega}$ units. Correspondingly, ℜ, ℘, and χ contain 3, 4, and 5 triangular building blocks, respectively. ∂ is the sum of the ξ_2 and $\bar{\omega}$ orbits.

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FIELD-TUNABLE BEREZINSKII-KOSTERLITZ-THOULESS CORRELATIONS IN A HEISENBERG MAGNET

Hannes Kühne, HLD Dresden

Two-dimensional (2D) spin systems with an XY anisotropy are known to undergo a Berezinskii-Kosterlitz-Thouless (BKT) phase transition at a finite temperature T_{BKT}, which marks the binding of topological defects in vortex-antivortex pairs. So far, experimental efforts to probe a genuine BKT transition in bulk materials were compromised by the onset of 3D long-range order (LRO). Still, if the perturbative terms relative to a purely 2D XY model are small enough, magnetic properties associated with BKT correlations are still observable in the transition regime.

A group of researchers from Germany, the United Kingdom, and the USA investigated the concept of magnetic-field-driven tuning of a quasi-2D square-lattice spin-1/2 antiferromagnet from the Heisenberg to the XY limit. As a model system of this study, the molecular-based bulk material $[Cu(pz)_2(2\text{-}Hopy)_2](PF_6)_2$ (CuPOF hereafter) yields a moderate intralayer nearest-neighbor exchange coupling of J/k_B = 6.80 K, determined from pulsed-field magnetometry (Figure 1), and a small interlayer interaction of about 1 mK.

The researchers investigated the spin correlations in CuPOF by means of various techniques, including nuclear magnetic resonance (NMR) and quantum Monte Carlo (QMC) simulations. The results of the critical temperatures of the BKT transition as well as that of the onset of long-range order provide clear evidence that the magnetic phase diagram of CuPOF is determined by the field-tuned XY anisotropy and the concomitant BKT physics under the influence of small interlayer interactions (Figure 2). The findings of this study are of importance for the research of a number of materials that realize quasi-2D spin systems, with an emerging low-temperature phenomenology driven by BKT correlations.

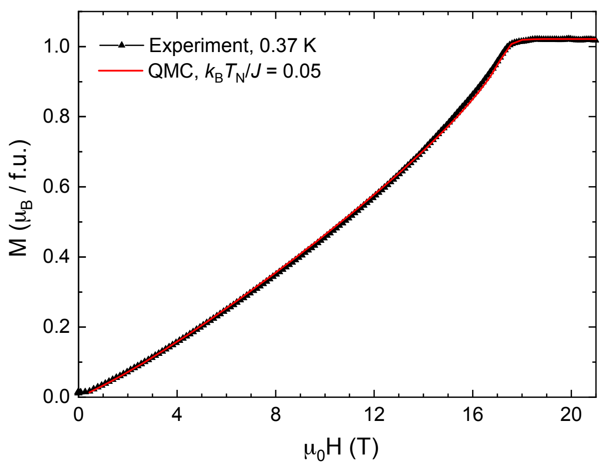

Figure 1: Pulsed-field magnetometry of CuPOF. The nearest-neighbor exchange coupling between the spin-1/2 moments is determined by comparison of the data (triangles) with QMC simulations (red solid line).

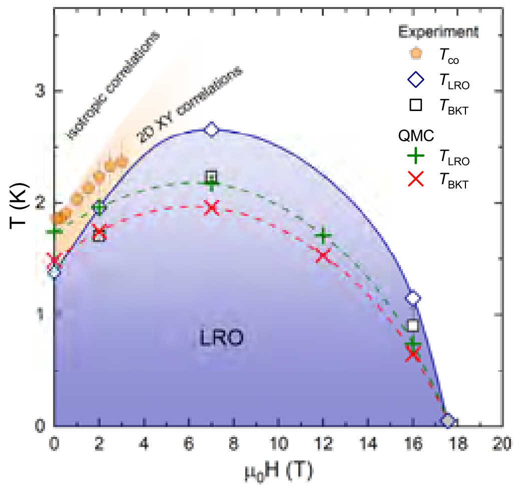

Figure 2: Magnetic phase diagram of CuPOF extracted from NMR, μSR, magnetometry, and QMC simulations.

Field-tunable Berezinskii-Kosterlitz-Thouless correlations in a Heisenberg magnet, D. Opherden, M. S. J. Tepaske, F. Bärtl, M. Weber, M. M. Turnbull, T. Lancaster, S. J. Blundell, M. Baenitz, J. Wosnitza, C. P. Landee, R. Moessner, D. J. Luitz, and H. Kühne, Phys. Rev. Lett. **130**, 086704 (2023).

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OPENING OF THE 29TH CALL FOR ACCESS

The 29th call for proposals has been launched on April 17, 2023, inviting researchers worldwide to apply for access to one of the large installations for high magnetic fields collaborating within EMFL.

The four facilities

> LNCMI - Grenoble - France: Static magnetic fields up to 36 T
> HFML - Nijmegen - the Netherlands: Static magnetic fields up to 38 T
> HLD - Dresden - Germany: Pulsed magnetic fields to beyond 95 T
> LNCMI - Toulouse - France: Pulsed magnetic fields of long duration to beyond 99 T and on the microsecond scale to beyond 200 T

run a joint proposal program, which allows full access to their installations and all accompanying scientific infrastructure to qualified external users, together with the necessary support from their scientific and technical staff.

Users may submit proposals for access to any of these installations by a unified procedure. You may find the online form for these proposals on the EMFL website.
www.emfl.eu/user

In the frame of the EU-funded ISABEL project, EMFL will continue to trial the novel **dual-access** procedure. In addition, EMFL has set up a novel **first-time access** mode with the aim of lowering the barrier for researchers to start using the EMFL facilities. Prospective users are encouraged to contact a staff member of EMFL, who will offer support in preparing the proposal. Additionally, EMFL will offer reinforced on-site support and reimbursement of travel and accommodation expenses. This will allow for increasing the size and diversity of the user community.

EMFL has launched three further access modes within ISABEL with this call: The novel **fast-track access** mode is permanently open. A convincingly urgent scientific case may be addressed as request to the EMFL Board of Directors (BoD). The BoD will evaluate the request and decide within typically two weeks, but may optionally consult one or more EMFL Selection Committee members and check the feasibility with the facility manager and the local contact. Further, users may apply for **technical-development access**, dedicated to the interest of scientists wishing to develop and improve technical installations and metrological procedures that could also be of interest to other EMFL users. A tailored **long-term access** mode was set up in order to meet the demand for schemes such as complex high-level science cases, which require a sequel of high-field experiments. If positively evaluated, the user will obtain an extended amount of access over a two- to three-year period. Proposals to the latter two access modes must be submitted during the regular call periods and will be evaluated by the BoD as a special category.

Please note that each experiment carried out must be followed up by a progress report and your publication record filled out online on the EMFL website. Please be aware that this information will also be made available to the Selection Committee.

To improve our user program further, your feedback to the user committee is highly appreciated.
Please find the form on the EMFL website.
https://emfl.eu/SelCom/UserCommittee/feedbackform.php

The deadline for proposals for magnet time is May 15, 2023.

The EMFL Selection Committee will evaluate the proposals. Selection criteria are scientific quality (originality and soundness), justification of the need for high fields (are there good reasons to expect new results), and feasibility of the project (is it technically possible and are the necessary preparations done). We strongly recommended contacting the local staff at the facilities to prepare a sound proposal and ideally indicate a local contact.

Please do acknowledge any support under this scheme in all resulting publications with „We acknowledge the support of the HFML-RU (or HLD-HZDR or LNCMI-CNRS), member of the European Magnetic Field Laboratory (EMFL)." UK users should, in addition, add "A portion of this work was supported by the Engineering and Physical Sciences Research Council (grant no. EP/N01085X/1)."

> You may find more information on the available infrastructures for user experiments on the facility websites.

www.hzdr.de/hld
www.lncmi.cnrs.fr
www.ru.nl/hfml

EMFL
European Magnetic Field Laboratory

The EMFL develops and operates world class high magnetic field facilities, to use them for excellent research by in-house and external users.

WORKSHOP ON MAGNETIC FIELDS IN LABORATORY HIGH ENERGY DENSITY PLASMAS

Paris-Palaiseau, France - December 19-21, 2022

This workshop was co-organized by staff from the Laboratoire National des Champs Magnétiques Intenses and the Laboratoire pour l'Utilisation des Lasers Intenses. It was financially supported by the European project ISABEL and the International Research Network MHEDP. The first day, the workshop took place at the Sorbonne Université in Paris, the two following days on the campus of the Ecole Polytechnique in Palaiseau. A visit of the recently commissioned multi-petawatt laser Apollon was organized the second day. The workshop was a success with 51 registered participants from all over the world including 37 invited contributions from scientific and technical experts on high magnetic fields and high-power lasers. Ample time was reserved for discussions after each presentation to identify the needs of the high energy density physics community regarding high magnetic fields as an input to the EMFL roadmap for future developments. The perspectives toward much higher magnetic fields and their adaptation to high-power lasers with high repetition rate (i.e., the quest for delivering magnetic-field pulses up to 60 T every minute) have been discussed. EMFL can provide its expertise, in particular with nondestructive pulsed magnets with large sample space, wide apertures, and associated power sources. A strong demand exists for such devices adapted to power-laser environments that can provide high magnetic fields on a well-controlled way in terms of time stability, homogeneity, and amplitude. The roadmap will be defined for European infrastructures interested in collaborating with the EMFL but the contributions coming from all over the world collected during this workshop will benefit the whole community.

ISABEL WORKSHOP "PERSPECTIVES WITH HIGH MAGNETIC FIELDS AT NEUTRON SOURCES"

Grenoble, France - November 2-4, 2022

On 2 - 4 of November 2022, the Chadwick amphitheatre at the Institute Laue-Langevin in Grenoble hosted the first workshop organized within the framework of the European project ISABEL. The aim of this workshop was to identify the needs of the neutron community, evaluate the technical challenges, and prepare a roadmap for developing unprecedented capabilities and the scientific case for high-field experiments at neutron sources.

Held in hybrid mode, the meeting was a great success gathering 64 scientific and technical experts of high-field and neutron facilities (with 44 participants on site and 20 remotely connected). The program was divided into four sessions including 22 invited contributions on scientific and instrumental aspects. In particular, the meeting was the occasion to have an overview of some scientific topics of greatest interest requiring very high magnetic fields, which should be investigated with neutron scattering within the next 5-10 years. Following the presentations of recent scientific and instrumental breakthroughs, the paths toward the collaborative development of modern high-field magnets for neutron-scattering facilities have been identified and discussed, including field strength and magnet geometries, sample volume, temperature and auxiliary measurement techniques. Ample time was reserved for discussions and was particularly productive in exchanging ideas and experiences.


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MAGNET SURVEYS

In the scope of the European project ISABEL, we will establish a roadmap for magnet-technology developments within EMFL. This will help to define future feasible goals using different technologies (HTS, DC resistive, hybrid, non-destructive and semi-destructive pulsed magnets) for the best possible service to our users taking into account optimized investment and running costs. The roadmap will consider the simultaneous evolution of the commercial sector as anticipated by our industrial partners and possible synergies arising from it.

Because the magnet-technology development at all high-field facilities is driven by the needs of the users, it is essential for us to have your feedback. We, therefore, invite you to participate in one of the following surveys:

> If you have a scientific-technical background, please respond to: **https://emfl.eu/isabel/magnet-survey/**
> If you are a potential industrial user without experience or scientific-technical background, please respond to: **https://emfl.eu/isabel/industry/survey-for-industry/**

There are no mandatory parts. You may skip magnets and magnet categories at your convenience. Navigation buttons and intermediate tables of contents are provided to facilitate a rapid completion of relevant parts.

Thank you in advance for your participation!

GLOBAL HiFF MEETING IN LAS VEGAS

Almost four years after the last in-person meeting in Nijmegen, members of the Global High Magnetic Field Forum (HiFF, **https://globalhighfieldforum.org/**) met in Las Vegas during the APS March meeting on March 8, 2023. HiFF is a consortium of High Magnetic Field Laboratories in China, Japan, USA, and Europe. After only virtual meetings during the last years, the participants enjoyed the personal interaction and openly discussed the situation caused by COVID-19 and the war in Ukraine, new developments, and future perspectives of high-field research around the globe.

Greg Boebinger reported on the recently funded NSF core grant of \$195.5M over 5 years, from 2023 to 2027. Greg further announced that he is stepping down as MagLab director sometime in 2023, but will serve until a successor is chosen. Ross McDonald reported on the new suite of pulse-field magnets available or close to commissioning at the Los Alamos branch of the MagLab. He further detailed the plans for the refurbishment of the rotor of the 1.4 GW pulse generator.

Liang Li, from the Wuhan High Magnetic Field Center (WHMFC) reported on the recent achievement of reaching almost 95 T in a pulsed-field magnet. Most importantly, he announced that the WHMFC will receive a major grant of 2.13 billion RMB for the upcoming, 14th 5-year plan which will allow to create new buildings on an area of about 47000 m^2, including new workshops and experimental stations.

Hiroyuki Nojiri informed on the Japan High Magnetic Field Collaboratory (JHMFC), a cooperation between Tohoku University, ISSP at the University of Tokyo, and Osaka University. He announced on the current installation of a new super-capacitor bank at ISSP and on the plans to commission a new long-pulse magnet in 2025. At Tohoku, a 30 T+ superconducting magnet is expected to be operational by the end of 2025.

Jochen Wosnitza informed on the recent developments of the EMFL facilities, including the various EU projects (ISABEL, SuperEMFL, ReMade@ARI), the status on the hybrid magnets in Grenoble and Nijmegen, and the activities within ARIE.

The participants welcomed that HFML will organize the next RHMF conference in Nijmegen in sync with the ICM in Bologna (30.06. – 05.07.2024). Further details will follow. Finally, Jochen Wosnitza handed over the HiFF chair to Liang Li, with consent of all members present.

Participants during the HiFF meeting (from left to right): Hiroyuki Nojiri, Eric Palm, Liang Li, Greg Boebinger, Laura Greene, Ross McDonald, Jochen Wosnitza, Mladen Horvatić.

UPCOMING EMFL USER MEETING IN NIJMEGEN

This year, EMFL will hold its user meeting in Nijmegen from June 13-14 in combination with the HFML-FELIX user meeting. The EMFL user meeting is planned for Tuesday 13/6 (afternoon) and Wednesday 14/6 (morning). Registration is open **here** and the site will be updated in due course.

The purpose of this meeting is to bring together users of the DC installations in Grenoble (LNCMI-G) and Nijmegen (HFML) as well as of the pulsed-field installations in Toulouse (LNCMI-T) and Dresden (HLD) and our regional partners to report on their experiments and exchange information about the opportunities offered by EMFL.

The user meeting will be followed by a workshop focusing on the combination of FELs and high magnetic fields (Wed afternoon /Thu morning). The program will include presentations and discussion sessions providing inspiration and information about the developments at our facilities and especially on the unique possibilities of the combination of infrared/THz free-electron lasers (FELs) and high magnetic fields. FEL and magnet-specific parallel sessions as well as a poster session are planned and we invite you to submit a poster contribution. You can indicate this upon registration on the website. Participation in the meeting includes lunch and dinner and is free of charge.

We hope to welcome many of you at the HFML-FELIX facility. See you in June.

UPCOMING EVENTS

1 International Conference on Strongly Correlated Electron Systems (SCES 2023), Incheon, Korea, July 2-7, 2023.
https://www.sces2023.org/

2 Joint European Magnetic Symposia (JEMS), Madrid, Spain, August 27 – September 1, 2023.
https://magnetism.eu/232-jems2023.htm

3 16th European Conference on Applied Superconductivity, Bologna, Italy, September 3-7, 2023.
https://eucas2023.esas.org/

4 International Conference on Magnet Technology (MT-28), Aix-en-Provence, France, September 10-15, 2023.
https://mt28.aoscongres.com/

5 Magnetic Resonance of Correlated Electron Materials, Dresden, Germany, September 17-23, 2023.
https://www.ifw-dresden.de/ifw-institutes/iff/events/international-conference-on-magnetic-resonance-of-correlated-electron-materials

6 68th Annual Conference on Magnetism and Magnetic Materials (MMM 2023), Dallas, USA, October 30 - November 3, 2023.
https://magnetism.org/

7 12th International Conference on Highly Frustrated Magnetism 2024 (HFM24), Chennai, India, J anuary 8 - 13, 2024.
https://ge.iitm.ac.in/HFM-2024/

8 International Conference on Magnetism (ICM2024), Bologna, Italy, June 30 - July 5, 2024.
https://www.icm2024.org/

New entry after the editorial deadline:

25th International Conference on the Electronic Properties of Two-Dimensional Systems (EP2DS-25), Grenoble, France, July 9 - 14, 2023.
https://ep2ds25mss21.sciencesconf.org/

A walkway at Jayu Park, Incheon.

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