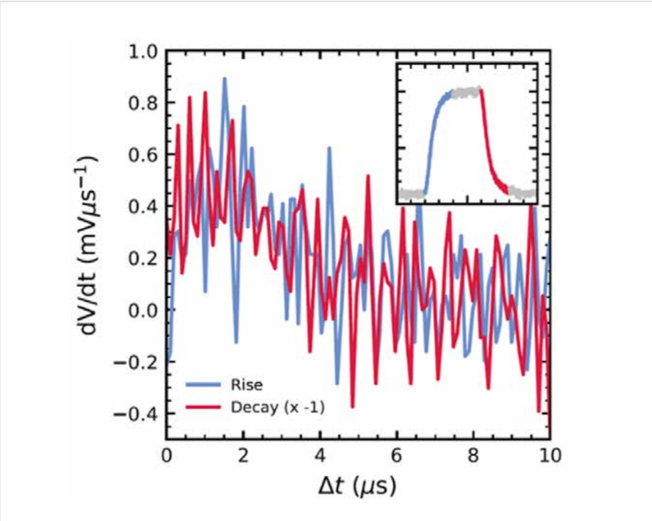
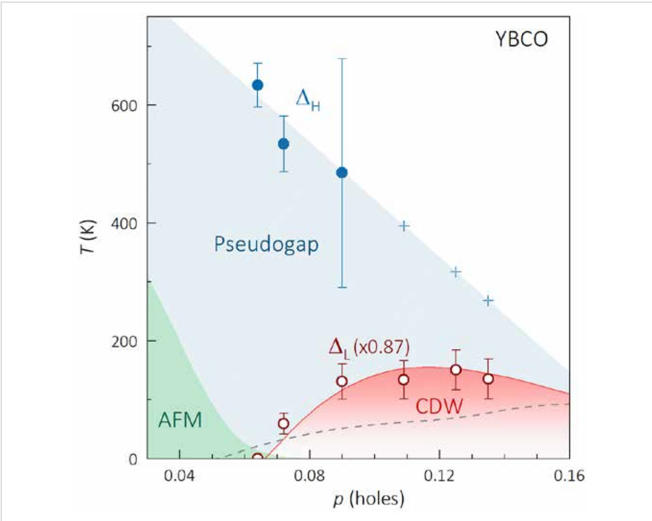
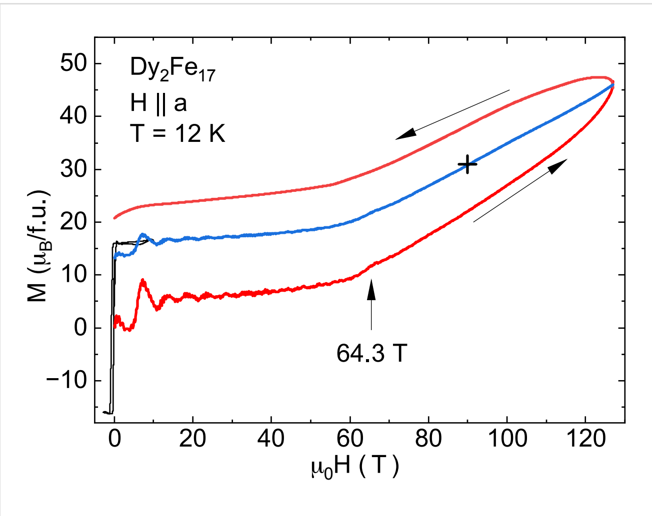
European Magnetic Field Laboratory

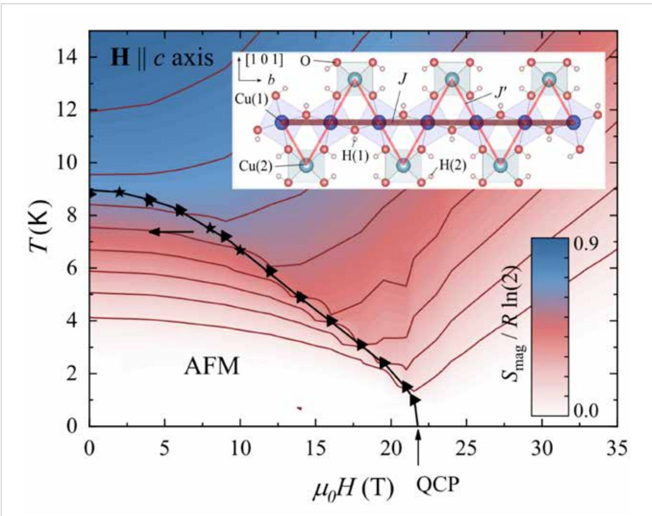
EMFLNEWS

Nº 2/25









CONTENTS

DEAR READER

Welcome to the summer edition of the EMFLNews, in which we can announce some personnel changes in the LNCMI management. After many successful years leading the Grenoble and Toulouse labs, Charles Simon stepped down as director of LNCMI. We would like to thank him for the excellent, always pleasant, and very constructive collaboration within EMFL and wish him all the best for his new role as emeritus in the Grenoble lab. On July 1, Rolf Lortz succeeded him as director and, therefore, as well as a member of the EMFL Board of Directors. Welcome, Rolf!

We are happy that Poland has become a member of EMFL again. Thanks to tireless lobbying efforts, Adam Babinski secured funding to support the Polish user community for the coming five years. He provides more information in a news article in this issue.

In June, we held our annual User and Selection Committee Meeting in the far south of Italy – in the charming town of Lecce. A report on the User Meeting, the new EMFL prizewinner, and the outcome of the proposal evaluations follows on the next pages. Four scientific highlights exemplify again the impactful results produced in our facilities. Finally, we present a fruitful industry cooperation in the search for vacuum birefringence, a fundamental phenomenon predicted by quantum electrodynamics.

Enjoy reading,

Jochen Wosnitza
Director HLD, Chairman EMFL

MEET OUR PEOPLE

Rolf Lortz, LNCMI

As of 1 July 2025, I have assumed the directorship of the French National High Magnetic Field Laboratory (LNCMI), a cornerstone of high-magnetic-field research in Europe and part of the EMFL. LNCMI stands at the cutting edge of scientific instrumentation, engineering innovation, and international collaboration. I am honored to step into this role and take the opportunity to introduce my scientific and academic background in this exciting new context.

My research journey began at the Technical University of Karlsruhe (now Karlsruhe Institute of Technology), where I earned my PhD in 2002, focusing on the thermodynamic properties of cuprate high-temperature superconductors. After completing a postdoctoral year at the same institution, I moved to the University of Geneva, taking on a five-year role as a senior research assistant (maître assistant). There, I specialized in high-resolution specific-heat measurements under extreme conditions, including high pressure, intense magnetic fields, and nanoscale samples.

In 2008, I joined the Hong Kong University of Science and Technology (HKUST) as a tenure-track assistant professor. Over the years, I progressed to associate professor (with tenure in 2014), and was promoted to full professor in 2020. During my tenure, I also served as Associate Head of the Department of Physics and Associate Director of HKUST's Materials Characterization and Preparation Facility. My research interests lie in the field of topological quantum materials and superconductivity – areas that continue to inspire and challenge me.

› Rolf Lortz, LNCMI director

Driven by a desire to take on new challenges and contribute to a world-class research infrastructure, I chose to join LNCMI as its new director. I am thrilled to work alongside a remarkable team of scientists, technicians, and engineers, and I am eager to apply my experience to guide and support ambitious magnet-development programs, top-of-the-art instrumentation efforts, and expanded research capabilities in quantum materials, condensed-matter physics, energy-related technologies, and others.

Outside the lab, I find joy in cycling, hiking, and spending time with my family. I look forward to embracing even more in the stunning natural surroundings of Grenoble.

CURRENT PULSE MEASUREMENTS ON CORRELATED SYSTEMS IN HIGH MAGNETIC FIELDS

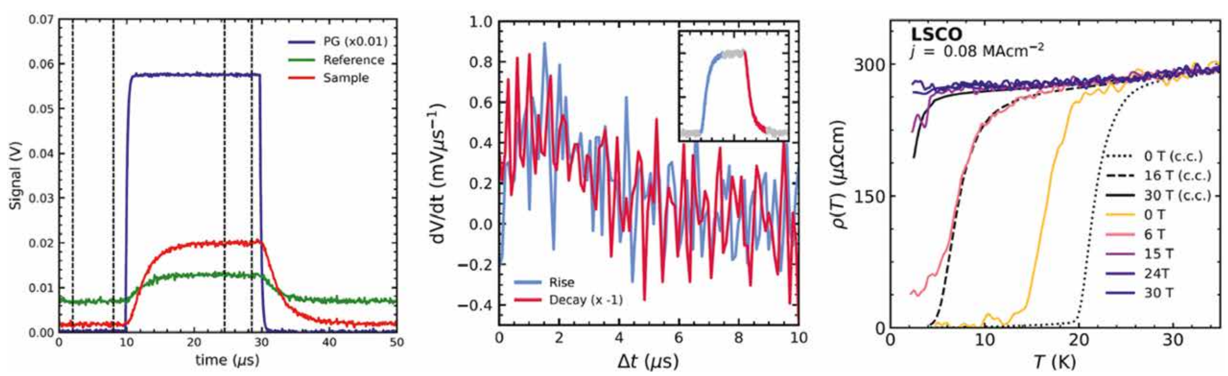
Caitlin Duffy, Nigel Hussey, and Sven Badoux, HFML-FELIX Nijmegen

A team of researchers from HFML-FELIX has developed an experimental set-up capable of generating stable, intense current pulses in conjunction with high magnetic fields for studying the electronic ground state of various unconventional superconductors, whose upper critical fields are beyond the field strength of the facility. Unconventional superconductivity often occurs in the vicinity of an ordered state, the maximum transition temperature T_c occurring at or in close proximity to a quantum critical point (QCP) associated with the suppression of this ordered phase.

Quantum fluctuations associated with this order are believed to be the dominant contribution to normal-state scattering (and hence dc resistivity) as well as the dominant pairing interaction. Elucidating the form of the dc resistivity in the limiting low-T region around this putative QCP can, therefore, serve as a pivotal test of such claims. Invariably, however, their upper critical field H_{c2} is also maximized at the QCP and can exceed the maximum field strengths available at a facility. The remarkable strength of these superconducting (SC) states is, thus, both an asset and a hindrance, and a complete overview of the low-T non-superconducting ground state and its evolution across an entire SC dome is presently lacking for many of the most important and widely studied families of unconventional superconductors.

Disorder can often weaken the superconductivity of a given material, but the introduction of disorder may also obscure the intrinsic physics. An alternative means of suppressing superconductivity is the application of current densities $J > J_c$, though the potentially adverse self-heating effects generated by these large currents can cause irreversible damage in the sample. The use of short (μs) pulses can mitigate this problem to some extent by allowing heat relaxation between successive pulses, though studies of unconventional superconductors using such short current pulses are few and far between.

In response to this, our team at HFML-FELIX sought a means of overcoming existing limitations using a compromised approach, in which short current pulses are combined with field strengths $H < H_{c2}$. The operation of an experimental set-up capable of generating stable, intense current pulses with amplitudes up to 500 mA was then demonstrated on two cuprate families – YBCO and LSCO. Combining the current pulse set-up with a magnetic field of 24 T, we were able to suppress completely the superconductivity in a LSCO thin film with $T_c \approx 20$ K and nominal $\mu_0 H_{c2} \approx 36$ T. The set-up can be used with static magnetic fields reaching 35 T in a temperature range of 1.4 to 300 K and shows the potential of the high-current/high-field combination to explore the non-SC ground state, specifically the normal-state magnetotransport properties of robust superconductors that were previously inaccessible due to their high upper critical fields.



(Left) Typical oscilloscope traces of a 20 μs pulse from the pulse generator (blue), the reference (green) and the sample (red). (Middle) Slopes of the rising and falling sections of the same sample signal, indicating that decay of the signal is due to capacitive coupling rather than heating. (Right) Suppression of the SC transition in an LSCO thin film with nominal $T_c \approx 20$ K and $\mu_0 H_{c2} \approx 36$ T with current pulses in a field of 24 T.

Pulsed current set-up for use in magnetic fields above 30 T; application to high-T_c superconductors, C. M. Duffy, T. M. Huijbregts, D. Juskus, B. Bernáth, R. J. Cool, J. F. G. Roesthuis, A. Brinkman, N. E. Hussey, and S. Badoux, **Instrum. Sci. Technol. 53**, 317 (2025).

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TWO GAPS IN THE SPIN SUSCEPTIBILITY OF A CUPRATE SUPERCONDUCTOR

Igor Vinograd, Michihiro Hirata, Tao Wu, Hadrien Mayaffre, Steffen Krämer, and Marc-Henri Julien, LNCMI-Grenoble

A fundamental obstacle to understanding high-temperature superconductivity in cuprates is that superconductivity itself prevents access to the normal-state properties at low temperatures. A prominent example is the spin susceptibility χ_{spin}: Its decrease upon cooling in the normal state has long been considered as a hallmark of pseudogap behavior. However, unambiguous interpretation of this decrease has remained elusive, and the pseudogap remains a central mystery, as low-temperature measurements inevitably reflect superconducting pairing rather than intrinsic normal-state behavior.

In this work, we used high magnetic fields to suppress superconductivity at several doping levels within the pseudogap phase of $YBa_2Cu_3O_y$. We then extracted χ_{spin} at low temperatures from ^{17}O and ^{89}Y Knight-shift measurements using nuclear magnetic resonance. Even though gapless excitations are present (χ_{spin} remains finite as temperature approaches zero), the data reveal two distinct thermally activated contributions, signalling the existence of two physically different energy gaps, neither of which can be attributed to superconductivity.

While a fully microscopic interpretation of these findings remains open, the doping dependence of the two gaps (figure), combined with the striking similarity to χ_{spin} of a hole-doped two-leg ladder system, suggests that one gap is associated with spin-singlet formation and the other with charge density waves (CDW). The pseudogap should then be viewed as a composite phenomenon, involving singlets and short-range CDW order at low temperatures, as well as short-range antiferromagnetism at higher temperatures.

Our interpretation suggests that, when not ordering into a striped antiferromagnet, spins tend to form short-range singlets. While this may seem a bold claim after decades of studies on the magnetic properties of underdoped cuprates, it is important to recognize that singlet signatures may easily be masked in systems with quenched disorder and/or itinerant carriers. In fact, the combination of favorable conditions that makes singlets detectable in strongly underdoped $YBa_2Cu_3O_y$ appears to be unique. These results further resonate with the spin-singlet/period-3 CDW phase recently discovered in numerical studies of the Hubbard (or more precisely, t–t'–J) model, thereby motivating further investigation into the parameters that stabilize this phase.

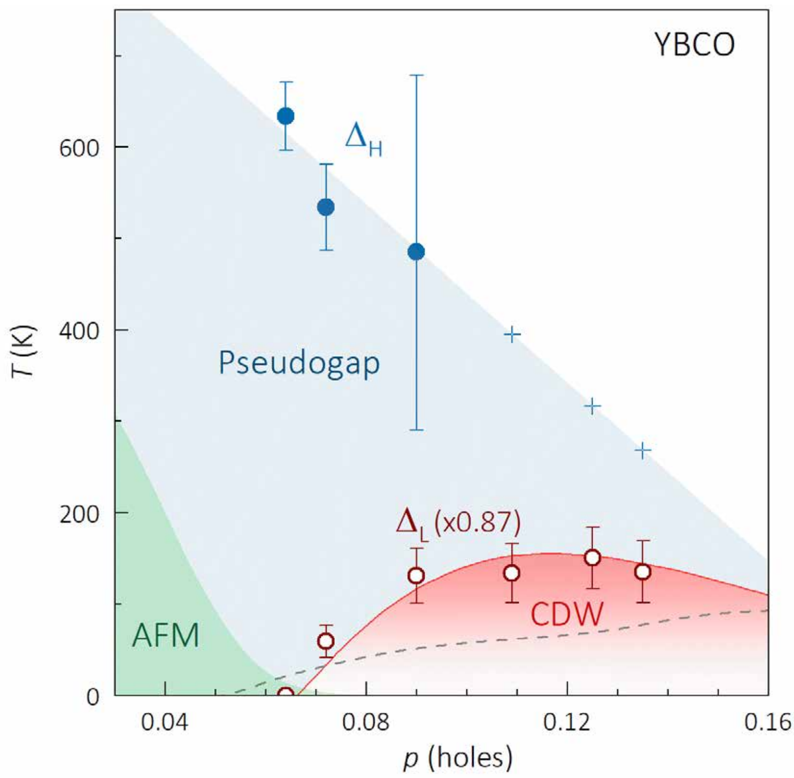

Figure: Phase diagram of $YBa_2Cu_3O_y$ as a function of temperature T and hole concentration p. The normal-state gaps Δ_H (attributed to spin singlets) and Δ_L (attributed to short-range CDW), extracted from fits to the Knight-shift data, both contribute to the pseudogap behavior in χ_{spin}. The crosses correspond to a linear extrapolation of Δ_H data, vanishing at p = 0.19. The dashed line depicts the superconducting T_c in zero field.

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Signatures of two gaps in the spin susceptibility of a cuprate superconductor, R. Zhou, I. Vinograd, M. Hirata, T. Wu, H. Mayaffre, S. Krämer, W. N. Hardy, R. Liang, D. A. Bonn, T. Loew, J. Porras, B. Keimer, and M.-H. Julien, **Nat. Phys. 21**, 97 (2025).

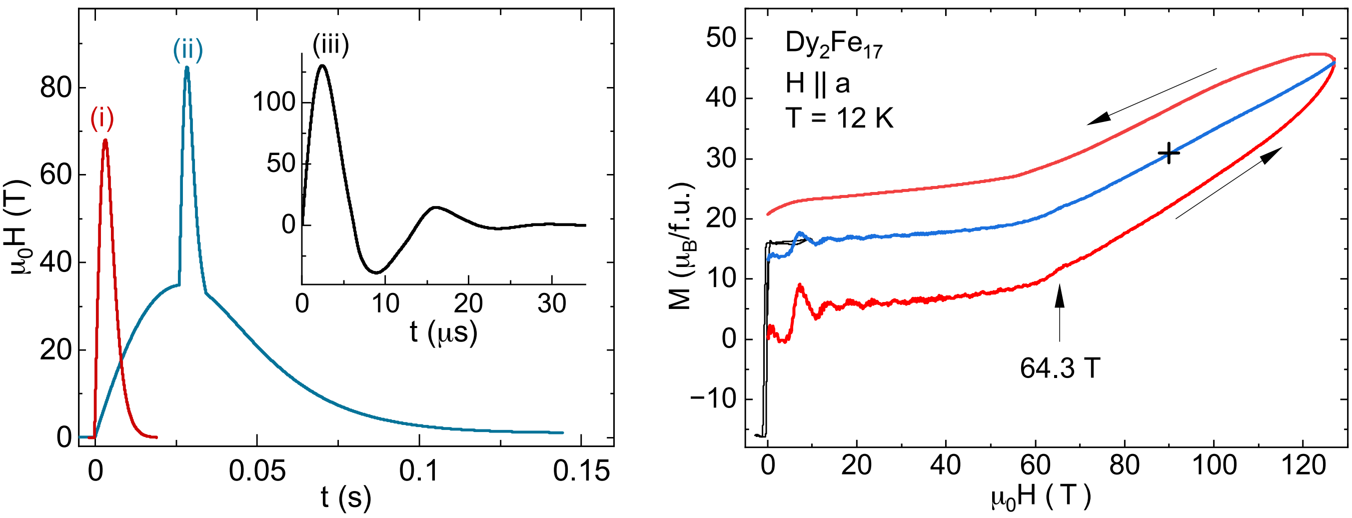
MAGNETIZATION STUDIES UP TO AND ABOVE 100 TESLA ON Dy_2Fe_{17}

Yurii Skourski, HLD Dresden, Oleksiy Drachenko, LNCMI-Toulouse

Iron-rich intermetallic compounds continue to be highly appealing for practical uses, mainly because iron is both abundant and cost-efficient. This advantage is especially notable in compounds with light rare-earth elements, whose magnetic moments align with the iron matrix, enhancing the overall magnetic effect. In contrast, heavy rare-earth-iron compounds such as Dy-Fe exhibit antiparallel alignment between the rare-earth and iron moments. This reduces their suitability for certain applications, but makes them valuable as model systems, since their exchange interactions can precisely be probed using high magnetic fields.

In practice, aligning magnetic subsystems is not always trivial, as the required field strength often exceeds the capabilities of standard DC magnets. On the other hand, R–Fe compounds (with R representing a rare-earth element) tend to be electrical conductors and, hence, are prone to eddy-current heating when pulsed magnets are employed. Measurements using the highest available fields, thus, require carefully designed inductive probes and well-prepared powder or needle-like samples, whose cross-section limits eddy currents but still provides sufficiently strong signals.

In our study, we benefited from the strong collaboration between HLD in Dresden and the MegaGauss facility at LNCMI in Toulouse. This partnership enabled us to perform complementary experiments using non-destructive long-pulse magnets up to 85 T and semi-destructive single-turn magnets reaching 130 T (left panel of figure). Although the detected signal in the latter case showed some spurious effects caused by eddy currents and reduced homogeneity of the pulsed field, it still permitted us to extract reasonable magnetization data up to this extreme-field range (right panel of figure). We, thus, managed to determine field-induced first-order phase transitions in the magnetization of Dy_2Fe_{17} at 64.3 T (with magnetic field H parallel a) and 77.7 T (H || b) directly. We further found the orthogonality point in this metallic hard magnet, situated at 90 T with a magnetization of 31 μ_B/f.u., which enabled us to determine the intersublattice exchange field of 215 T on Dy.



(Left) Field profiles of the magnets used in the study. (Right) Megagauss magnetization data with (blue) and without (red) eddy-current correction.

Orthogonality point and intersublattice exchange in Dy_2Fe_{17} determined in strong magnetic fields, Y. Skourski, M. D. Kuz'min, K. P. Skokov, N. Shayanfar, A. V. Andreev, S. Zherlitsyn, S. Yasin, L. Zvyagina, O. Drachenko, O. Portugall, and J. Wosnitza, **Phys. Rev. Materials 9**, 064404 (2025).

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QUANTUM CRITICALITY IN THE NATURAL MINERAL ATACAMITE

Tommy Kotte, HLD

Natural crystals fascinate us with their striking colors, uniform shapes, and perfect symmetry. Among the vast class of minerals, some materials exhibit highly unusual magnetic properties and have been extensively studied as prototype systems for fundamental magnetic models. One such example is atacamite, $Cu_2Cl(OH)_3$, an emerald-green mineral recently identified as hosting a magnetic sawtooth-chain structure, i.e., chains of corner-sharing triangles arranged linearly, representing one of the simplest models for studying magnetic frustration. In atacamite, this frustration leads to the onset of an antiferromagnetic (AFM) ground state only below 9 K, despite strong AFM exchange couplings between the magnetic Cu ions within the chain of approximately $J/k_B \approx 300$ K and $J'/k_B \approx 100$ K (see inset of figure).

An international team of researchers has recently studied the behavior of atacamite in high magnetic fields applied along the crystallographic c axis, performing experiments at all EMFL laboratories. By combining high-field specific-heat, magnetization, and nuclear magnetic resonance (NMR) measurements, we were able to track the suppression of the AFM ground state with increasing magnetic field, up to a quantum critical point (QCP) at approximately 21.9 T. At this field, magnetization measurements indicated half saturation of the system. Beyond this point, long-range magnetic order vanishes completely, as evidenced by NMR (right figure). Given the strength of the exchange couplings, this loss of order is particularly striking. The QCP is accompanied by a highly distorted entropy landscape (left figure), resulting in a pronounced magnetocaloric effect at low temperatures.

Using numerical calculations based on the density-matrix renormalization group (DMRG) method, we found evidence that, at the QCP, one magnetic subsystem, formed by Cu(2) ions located at the tips of the triangles, becomes polarized. This polarization effectively weakens the interaction between neighboring sawtooth chains. As a result, the three-dimensional magnetic structure essentially transforms into an array of one-dimensional Heisenberg chains, in which no long-range order is maintained.

Beyond its fundamental significance in revealing a novel nature of the QCP in atacamite, the pronounced magnetocaloric effect observed in this frustrated material could inspire the search for new magnetocaloric compounds within the broader class of frustrated magnets, potentially advancing future cooling technologies.

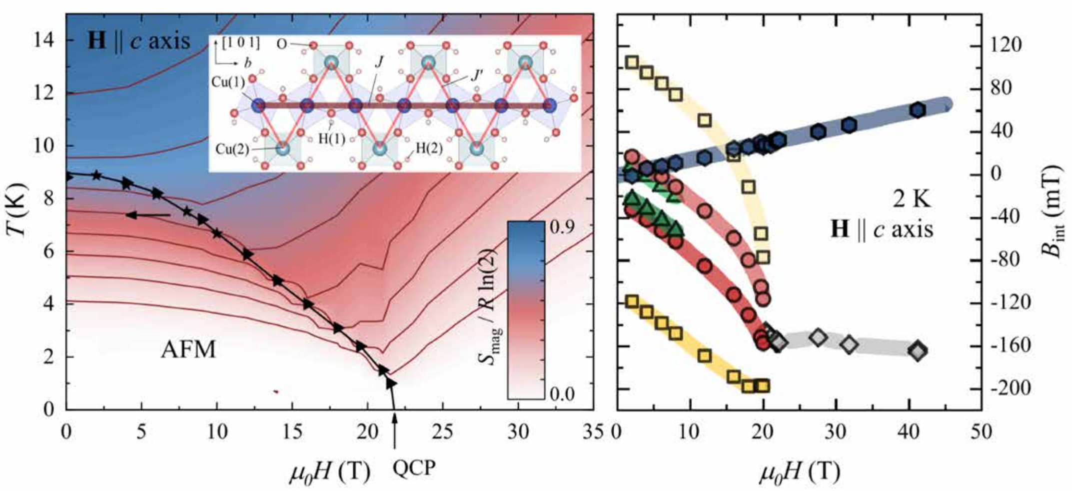

Figure: (Left) Entropy landscape of atacamite. Black triangles denote the AFM phase boundary. Inset: The sawtooth chain as the building block of the magnetic coupling scheme. (Right) NMR results showing the internal field B_{int} as detected by ^1H nuclei in the sample as a function of applied magnetic field. The collapse of the lines above 20 T indicates the breakdown of AFM order at the QCP.

Atacamite $Cu_2Cl(OH)_3$ in high magnetic fields: Quantum criticality and dimensional reduction of a sawtooth-chain compound, L. Heinze, T. Kotte, R. Rausch, A. Demuer, S. Luther, R. Feyerherm, E. L. Q. N. Ammerlaan, U. Zeitler, D. I. Gorbunov, M. Uhlarz, K. C. Rule, A. U. B. Wolter, H. Kühne, J. Wosnitza, C. Karrasch, and S. Süllow, **Phys. Rev. Lett. 134**, 216701 (2025).

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RESULTS OF THE THIRTY-THIRD CALL FOR ACCESS

The 33rd call for access ended on 15 May 2025. After that, the EMFL Selection Committee ranked the proposals on a competitive basis until 16 June 2025, just before the User Meeting in Lecce.

Our four facilities

- LNCMI - Grenoble - France: Static magnetic fields to 37 T
- HFML - Nijmegen - the Netherlands: Static magnetic fields to 38 T
- HLD - Dresden - Germany: Pulsed magnetic fields to beyond 95 T
- LNCMI - Toulouse - France: Pulsed magnetic fields of long duration to over 99 T, and on the microsecond scale to beyond 200 T

are open to users worldwide. EMFL operates a joint transnational access program, which grants full access to these installations and all associated scientific infrastructure to qualified external users, supplemented by the necessary support from our scientific and technical staff on site.

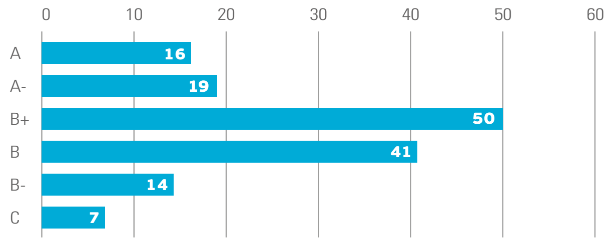
For this 33rd call, we received 147 applications from 20 different countries. From these, 5 are proposals for dual access with regional partner laboratories, 3 are asking for technical-development access, and 6 for fast-track access (received between January and July 2025). First-time users submitted 17 proposals. We introduced these novel access procedures within the EMFL-ISABEL project.

The Selection Committee consists of 18 specialists covering the following five scientific topics:

- Metals and Superconductors (32 applications),
- Magnetism (74 applications),
- Semiconductors (27 applications),
- Soft Matter and Magnetoscience (8 applications),
- Applied Superconductivity (6 applications).

Besides of ranking the proposals, the committee members decide on the number of accepted magnet hours and number of pulses.

NEXT CALL:
Launch: October 15, 2025
Deadline: November 15, 2025



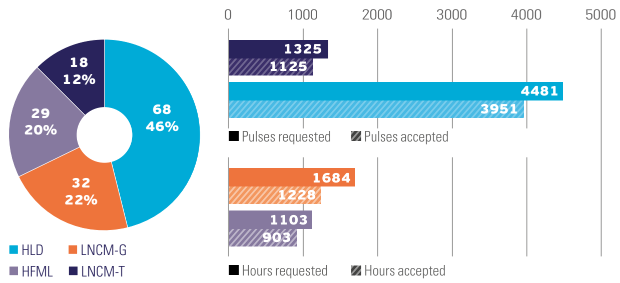
Evaluation of applications

The Selection Committee ranks the proposals in three classes:

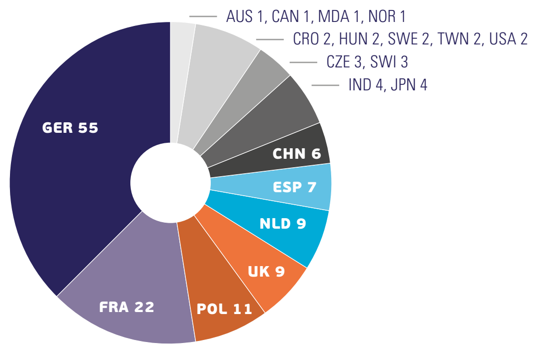
A (excellent proposal to be carried out),
B (should be performed but each facility has some freedom considering other constraints),
C (poorly crafted proposal, or one that does not need any of the four unique high-magnetic-field facilities).

In the B category, the ranking + or - serves as a recommendation to the facility. This degree of freedom is necessary to allow the facilities to consider other aspects such as available capacity and equipment necessary for a successful outcome of a project.

Distribution by facilities
Number of applications



Distribution by country of PI affiliation



POLAND EXTENDS ITS EMFL PARTICIPATION

Adam Babinski, University of Warsaw

The Polish community of high magnetic field users has been very active for several decades. A large number of applications, realized experiments, and resulting publications have put Polish researchers among the forefront in the number of EMFL users. That fact justified our participation in EMFL from 2019 to 2023.

This year we are back! Financial support from the Polish Ministry of Science (Grant 2025/WK/01) ensures our official joining of EMFL from 2025 to 2029. At top of the official participation of the University of Warsaw as EMFL member, the current project also explores an avenue of transnational collaboration, which has been proven very successful during the ISABEL project within Horizon 2020. Up to two experiments per year can be performed in the research laboratories of the Faculty of Physics at the University of Warsaw within **the dual-access scheme.** With just one proposal, EMFL users will be able to apply for first-step access to moderate-field-range equipment using superconducting magnets, and then to the highest possible magnetic fields at one of the EMFL installations in Grenoble, Nijmegen, Toulouse, or Dresden.

In Warsaw, experienced staff and a 16 T magnet enable optical experiments in Faraday or Voigt configuration. The magnet is equipped with a variable-temperature insert permitting measurements from room temperature down to pumped helium (about 1.5 K). Persistent switches at superconducting coils allow for extended stay at a single field in addition to regular field-sweep measurements. Available techniques comprise reflectivity, transmission, photoluminescence, as well as Raman scattering. A range of lasers can be used for the experiments.

Moderate-field-range lab at University of Warsaw.

https://lasso.fuw.edu.pl/isabel.html

Our previous involvement in the dual-access scheme within the ISABEL project resulted in several contributions devoted to two-dimensional materials, which attracted the interest of the research community: "Quantification of exciton fine structure splitting in a two-dimensional perovskite compound" by K. Posmyk et al., published in **Phys. Chem. Lett. 13**, 4463 (2022), and "Strain-induced exciton hybridization in WS_2 monolayers unveiled by Zeeman-splitting measurements" by E. Blundo et al., published in **Phys. Rev. Lett. 129**, 067402 (2022), are just two examples of studies supported by ISABEL. The inclusion of the dual-access scheme into the EMFL portfolio, supported by our new project, promises more discoveries to follow.

Last but not least, the project also supports dissemination activities and, in particular, the hosting of the EMFL User Meeting in Warsaw in June 2026. We believe that this event will substantially add to building the high-field research community in Europe, thus strengthening the role of high-magnetic-field research worldwide.

Stay tuned and see you in Warsaw in 2026!

EMFL USER MEETING


© Daniela Dell'Anna, Università del Salento

This year, EMFL held its User Meeting on 17 June 2025 at the University of Salento in the picturesque baroque town Lecce. It was the first time that an EMFL User Meeting took place in Italy. The Board of Directors has chosen this venue after the Italian magnetism community, headed by Giuseppe Maruccio, joined EMFL in February 2024. The meeting was an ideal occasion to introduce the EMFL facilities and the science performed at very high magnetic fields to the members of the Italian Magnetism Association.

The meeting started with an introductory lecture by Jochen Wosnitza, chair of the EMFL Board of Directors, who presented recent developments within EMFL. The EMFL Prize ceremony (see below) took place remotely, since the prizewinner, Caitlin Duffy, was taking part in a summer school in Cargese.

The User Meeting further included two scientific sessions, in which our users highlighted some of their most recent research. The scientific talks covered a broad range of research enabled by the use of the very high magnetic fields at EMFL. This included topics on cuprate superconductors, semimetals, dichalcogenide trilayers, twisted bilayer graphene, magnetocaloric materials, as well as altermagnets. An important part of the meeting was the User Committee Meeting, chaired by Raivo Stern (NICPB, Tallinn, Estonia), after which the users gave valuable feedback to the Board of Directors. Finally, some talks covered scientific focus areas as well as the structure of the Italian Magnetism Association.

We would like to thank Giuseppe Maruccio and all the staff at the University of Salento in Lecce for their excellent organization of the inspiring meeting in a remarkable setting. Indeed, all coffee breaks, as well as the preceding Selection Committee meeting on 16 June, took place in the former monastery of Olivetani.

EMFL Prize 2025


© LNCMI-Toulouse

› Caitlyn Duffy and Cyril Proust

During the User Meeting in Lecce, Caitlin Duffy received the EMFL Prize 2025. Cyril Proust, winner of the first EMFL Prize in 2009, had the honor of presenting the award in a traditional small ceremony. The Prize recognizes outstanding achievements related to research in all disciplines utilizing high magnetic fields.

Caitlin received her PhD in physics in March 2024 from Radboud University Nijmegen, working with Nigel Hussey. Currently, she is a postdoc fellow at the LNCMI in Toulouse. The prize recognizes Caitlin's work related to the use of high magnetic fields in unconventional superconductors. While she particularly focused on cuprate superconductors, she also studied iridates and infinite-layer nickelates. For her PhD, she investigated the strange metal phase of both hole-doped and electron-doped cuprates through high-field magnetotransport measurements coupled with sophisticated numerical simulations. Her PhD led to several articles that showcase Caitlin's exceptional range of capabilities.

In particular, one study has the potential to be a landmark paper in the cuprate field, providing robust evidence that low-energy spin fluctuations are the primary pairing glue in electron-doped cuprates. Besides her exceptional experimental skills, Caitlin possesses a deep physical insight and scientific maturity. She has a lot of what it takes to be a genuine ambassador for the high-field community and is a worthy recipient of the EMFL Prize.

A FRUITFUL COLLABORATION WITH SAFRAN

At LNCMI Toulouse, the BMV (Birefringence Magnétique du Vide) group has been investigating the interactions between photons and magnetic fields since several years. The main goal is to observe a variation of the velocity of light in vacuum in the presence of an external magnetic field. In the context of quantum electrodynamics, the predicted relative change is some 10^{-24}, depending on the square of the magnetic-field amplitude. Therefore, fields as high as possible – such as the ones provided by pulsed coils – are necessary.

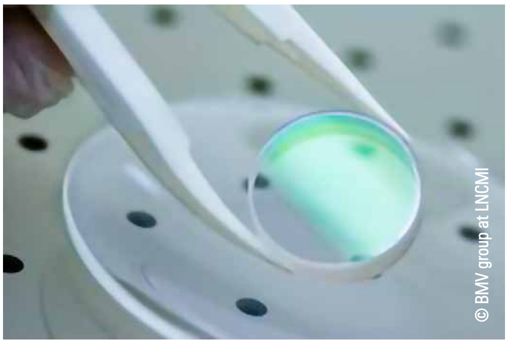
To increase the measurable quantity of photons, the particles must be kept as long as possible in the magnetic-field region. To this purpose, light is trapped in a resonant optical cavity, called Fabry-Perot cavity, consisting of two highly reflective mirrors. The laser frequency has to be tuned constantly to be at resonance with the cavity resonance frequency.

Our group has succeeded in reaching a sensitivity better than 10^{-20}. Experimentally, we found out that the main optical noise stems from the mirrors. Improved mirrors with unprecedented characteristics in terms of photon losses and the quality of reflections are thus necessary. To this aim, we started a collaboration with the Paris-based company Safran.

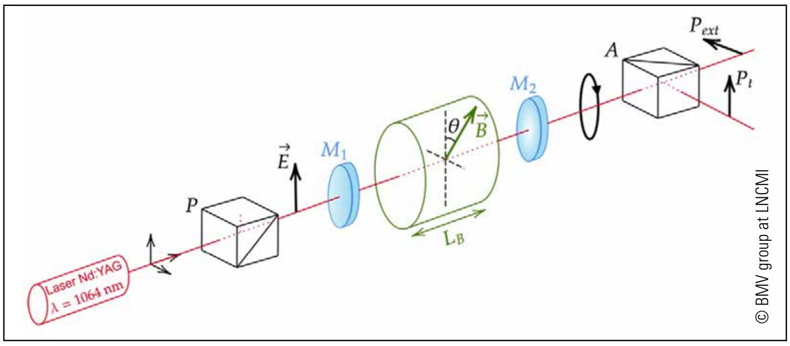
Safran S.A. is a world expert in the fabrication of high-performance optics, particularly mirrors. The international astronomy community and research institutions in general profit from the company's know-how. Its *savoir-faire* is unique in terms of polishing and measuring mirror characteristics. Our field of expertise lies in the measurement of mirror polarization. The collaboration has been, therefore, very fruitful.

The world's highest reflective mirrors at a wavelength of 1064 nm have been produced by Safran and tested at LNCMI. Thanks to these mirrors, light can be kept 300,000 times longer in the region of the magnetic field. This is quite impressive.

Moreover, the collaboration has been able to measure the polarization effects of these high-tech mirrors for the first time. This is an important step to understand the origin of polarization noise, caused by reflection on the mirrors, and eventually to eliminate it, thus obtaining mirrors that will show minimum polarization noise in our experimental set-up at LNCMI.



› High-tech mirror, produced by Safran



› Scheme of the experimental set-up at LNCMI-Toulouse

› **safran-group.com/fr**
› **lncmi.cnrs.fr/optique-et-matiere-diluee/birefringence-magnetique-du-vide**

UPCOMING EVENTS

Welcome reception and gala dinner of the IRMMW-THz conference 2025 will be hosted at Dipoli – the main building of Aalto University

1 30th International Conference on Low Temperature Physics (LT30), Bilbao, Spain, August 7 - 13, 2025.
lt30.es

2 50th International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz 2025), Espoo, Finland, August 17 - 22, 2025.
irmmw-thz.org/venue

3 Joint European Magnetic Symposia (JEMS), Frankfurt, Germany, August 24 - 29, 2025.
jems2025.eu

4 17th European Conference on Applied Superconductivity, Porto, Portugal, September 21 - 25, 2025.
eucas2025.esas.org

5 16th International Symposium on Crystalline Organic Metals, Superconductors and Magnets (ISCOM 2025), Toyohashi/Okazaki, Japan, September 28 - October 3, 2025.
registration.ims.ac.jp/iscom2025/home

6 WE Heraeus school on new phases, superconductivity and emerging electronic properties of quantum materials, Les Houches, France, September 28 - October 3, 2025.
fermi-sces2025.grenoble.cnrs.fr

7 DPG Spring Meeting of the Condensed Matter Section, Dresden, Germany, March 8 - 13, 2026.

8 Joint March Meeting and April Meeting (APS Global Physics Summit), Denver, USA, March 16 - 20, 2026.
aps.org/events/2026/joint-meeting-2026

9 International Magnetics Conference (INTERMAG 2026), Manchester, UK, April 13 - 17, 2026.
intermag2026.org

10 International Conference on Strongly Correlated Electron Systems (SCES 2026), Toyama, Japan, September 27 - October 2, 2026.
smartconf.jp/content/sces2026

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