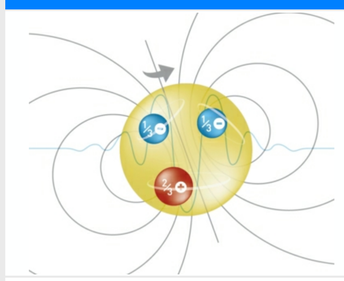
THE EUROPEAN NEUTRON SOURCE

ILLnewsletter

December 2017

Consult our web site and follow us on Twitter !

NEWS FOR USERS



NEUTRONS ARE BACK!

We have now received the necessary authorisations from the French safety authorities and plan to restart operations early March – more details and experiment scheduling will follow.

ILL and ESS European User meeting

In June this year, the ILL and ESS signed a memorandum of understanding to collaborate on a range of subjects. In this context, the ILL and ESS are organizing a joint European Neutron User Meeting, on 10-12 October 2018, in Grenoble. This will be a unique occasion to explore new scientific opportunities that will arise from Phase 2 of the Endurance programme at ILL, which will run from 2019 to 2023, and the start of the user programme at ESS in 2023. The User Meeting will also be the focus of several satellite workshops that will focus attention on specific scientific areas. Please note the date. More information will follow soon...

CALL FOR PROPOSALS

The next deadline for proposal submission is Wednesday **14 February 2018**, midnight (EU time). The **web** system is now **open all year long.**

ILL 2/3 member country rule: ALL proposals will be considered and a limited amount of beam time (a few % of the total) will be granted to proposals not complying with this rule on the basis of scientific excellence.

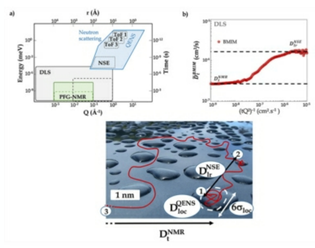
Outreach for new users: A limited beam time access for new users from non-member countries will be also available via the EU project FILL30. Proposals will be evaluated via the regular panel meetings. For more information please contact the ILL user office.

Director's Discretionary Time: Full experiments can be requested at any time – scientific quality and the need for beam time at short notice must be justified.

Easy Access: Short measurements on all instruments in the DIF, LSS and Spectroscopy groups will be available from the next cycle onwards. More details will follow.

Read more

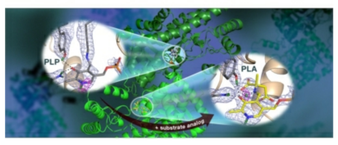
SPOTLIGHTS ON SCIENCE



Ionic Liquids: nanostructuration and multiscale transport properties. Technological consequences for batteries

The remarkable chemical and electrochemical stability of ionic liquids makes them excellent candidates for the development of energy storage systems, meeting strict criteria for battery safety, in particular concerning combustion. Bringing together three independent probes (neutrons, NMR and light-scattering), a detailed, multiscale analysis of the cation, self-diffusion process from the molecular to the mesoscopic scale has been performed. It showed that nanometric, transient, self-association is a limiting factor to the electrochemical conductivity and that the frustration of the formation of these aggregates by unidimensional, nanometric, confinement is a promising way to turn ionic liquids into prime candidates against less stable, benchmark electrolytes.

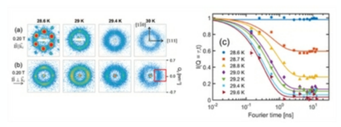
Read more.



Neutrons observe vitamin B6-dependent enzyme activity useful for drug development

An ORNL-led team performed neutron structural analysis of a vitamin B6-dependent protein, potentially opening avenues for new antibiotics and drugs to battle diseases such as drug-resistant tuberculosis, malaria and diabetes. Specifically, the team used neutron crystallography on the ILL instrument LADI, to study the location of hydrogen atoms in aspartate aminotransferase, an enzyme vital to the metabolism of certain amino acids. They visualized the first neutron structure of a vitamin B6 enzyme that belongs to a large protein family with hundreds of members that exist in nature.

Read more.



Investigating the magnetic field – temperature phase diagram of MnSi: it's not easy to untwist!

Researchers have used small angle neutron scattering to investigate the magnetic phase diagram of MnSi in detail, leading to results that challenge established approaches to chiral magnetism. The study revealed that the twisted, helical, conical or skyrmionic, long range magnetic order disappears abruptly with increasing temperature, as a first-order, phase transition, also under magnetic fields. The origin of this abrupt change is not clear and cannot only be attributed to fluctuations as was assumed so far.

Read more.

Ultra-cold neutrons aid the search for dark matter

The nEDM (neutron electric dipole moment) collaboration at PSI has collected high-precision data for the EDM of the neutron in a recently completed experiment. Measurements were conducted using an improved and upgraded apparatus, previously employed at the ILL by the RAL-Sussex-ILL EDM collaboration, with ultra-cold neutrons (UCNs) from the ILL reactor between 1998 and 2002. The high quality of all these data enabled their re-analysis with a different and new goal, namely to search for axion-like dark matter.

A new nEDM instrument has just arrived at ILL to exploit the new UCN source, SuperSun, that is being developed in the Endurance upgrade programme.

Read more.

MORE HIGHLIGHTS HERE !

GENERAL NEWS

New Cryo-Electron Microscope Platform

On November 10, 2017, the high-end Titan Krios electron microscope (Cryo-EM) was inaugurated at the ESRF. The microscope is part of a platform that includes microscopes located at the IBS and ILL. The platform brings together the ESRF, EMBL, ILL and IBS to provide European researchers with an innovative facility dedicated to structural biology. The platform will enable scientists to easily combine information collected using a variety of techniques such as diffraction and scattering experiments or the cryo-electron microscope. The results will greatly increase the scientific community's ability to analyze and understand complex bio-molecules.

Read more.

Italy celebrated the 20th anniversary of its Scientific Membership to the ILL and more than 750 scientific publications with a devoted event, held in Trieste on 5 October. The last two decades of research conducted by Italian users at the ILL were also marked at the CNR in Rome, which hosted the ILL steering committee on 29 and 30 November.

Read more.

USER ACCESS POLICY

In January 2017, the EU Commission has published a Charter for Access to research infrastructures (RIs), which sets out non-regulatory principles and guidelines as a reference when defining access policies for RIs. In this context, the ILL has defined its own **User Access policy**, defining the principles and guidelines for access to ILL infrastructures and related services. All users participating in experiments are obliged to comply with the ILL User Access policy. They are asked to commit to this when submitting their proposal (by ticking the box 'I agree with the ILL access policy'). The complete document can be found here.

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