



ILL newsletter

SEPTEMBER 2018

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NEWS FOR USERS



Reminder: Call for proposals

Next deadline for standard proposal and long term proposal submission is **17th September 2018**, midnight (EU time). The web system is now **open** all year round. Accepted proposals will be **scheduled** during the first **1.5 cycles in 2019**.

ILL 2/3 member country NEW rule : ALL proposals will be considered and a few % of the total beam time 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 also be available via the EU project FILL2030. Proposals will be evaluated via the regular panel meetings. For more information please contact the [ILL user office](#). Read the detailed information [here](#). Explore other routes for [getting beamtime](#).



ILL and ESS European User meeting

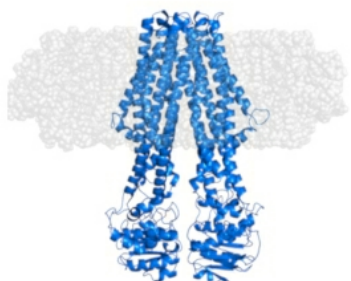
Abstract submission for posters is now closed. All poster abstracts will be accepted and you will receive notification in the next days. Registration has been closed since the capacity of the venue has been reached. **Please book your hotel soon as well as they are filling up very quickly, October being a very busy month in Grenoble.**

All information concerning the User Meeting is available on the website which is updated regularly:

<http://www.neutrons4europe.com/>

We are looking forward to seeing you in Grenoble to discuss science and future opportunities with neutrons.

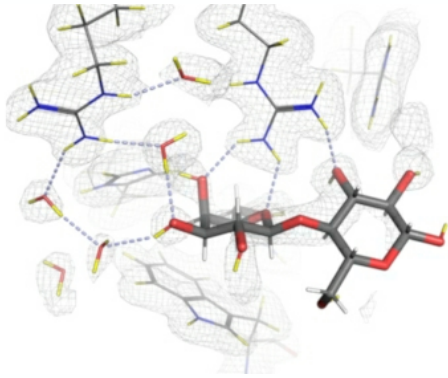
SPOTLIGHTS ON SCIENCE



A novel approach for the study of integral membrane proteins

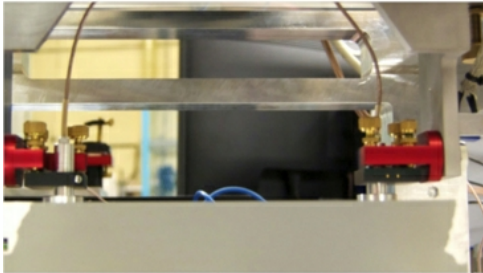
Membranes that form our cells contain a large number of proteins. Membrane proteins are therefore a crucial class of macromolecules in living systems, providing for example transport gateways into and out of the cell, facilitating signalling between cells, as well as being involved in enzyme catalysis. These functional roles make membrane proteins particularly important as drug targets. However, structural studies of integral membrane proteins (IMPs) have proved extremely challenging, since they must be studied in the presence of their lipid environment. The normal protein crystallization approach is not possible. Recently, the first structural study of an IMP using a stealth carrier nanodisc deuteration strategy has just been completed.

[Read more](#)



First study of galectin proteins with neutrons, guiding future drug development

Galectins (sugar-binding proteins) attach to other proteins via the carbohydrates on their surfaces. As such they impact on a range of processes in the cell associated with a number of diseases, including heart disease and breast cancer – the most common cancer in women worldwide, with 1.7 million new cases diagnosed in 2012 alone. Understanding how galectins bind to and distinguish between different sugars can help guide the design of new molecules that act as inhibitors – blocking this process, and therefore limiting the development of certain diseases. In a recent collaborative effort, researchers pinpointed hydrogen-bonding interactions in the C-terminal carbohydrate recognition domain of galectin-3 for the first time using neutron crystallography. These detailed observations will inform future drug design. [Read more](#)



No sign of symmetrons

New theories for "dark energy" are constantly being suggested. One of the candidates is the so-called "symmetron fields", which are said to pervade space rather like the Higgs field. At the TU Vienna researchers have developed an experiment capable of measuring - with the help of neutrons - extremely small forces. The measurements were taken during a 100-day campaign at the ILL, on its PF2 ultra-cold neutron source. They could have provided pointers to the mysterious symmetrons - but the particles didn't show up. Although this is not the end of the theory, it does at least exclude the possibility of symmetrons existing across a broad range of parameter space - "Dark energy" is going to have to be explained differently. [Read more](#)

[MORE HIGHLIGHTS HERE !](#)

GENERAL NEWS

Joining forces to innovate new space technologies

On 9th July, the ILL and the ESRF teamed up with leading European space companies OHB System AG and MT Aerospace AG to tackle industry challenges. We are joining forces to advance the characterisation of aerospace materials and make fabrication processes more efficient by probing matter with X-rays and neutrons. Space exploration has led to many societal benefits. The first satellites contributed critical knowledge and capabilities for telecommunications, global positioning, and advances in weather forecasting. Successful space exploration encompasses a broad range of missions requiring advanced systems and capabilities that will accelerate the development of many critical technologies, including advanced materials and structural concepts. Research leading to innovations in the materials behind space technologies and their manufacturing methods will pave the way for more successful space missions and applications for use on Earth.

[Read more](#)

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