

THE ILL'S DIRECTOR, PROFESSOR HELMUT SCHOBER, SPEAKS TO PAN EUROPEAN NETWORKS ABOUT THE INSTITUTE'S RELATIONSHIP WITH ITALIAN NEUTRON SCIENTISTS AND HOW THE ILL HAS ITSELF DEVELOPED OVER TIME

# The ILL – fostering innovation

**2017** marks 20 years since Italy became a scientific member of the world's flagship centre for neutron science, the Institut Laue-Langevin (ILL). In 2016, Italy contributed around €4.2m to the ILL's overall budget and received 5.5% of ILL's overall beam time (almost 154 days) in return; 10% of ILL publications involved Italian scientists – just a snapshot into how critical ILL membership is for Italian-led scientific innovation. Two of the 16 instruments in the upcoming European Spallation Source's suite were submitted or co-proposed by Italian researchers, illustrating how Italian expertise in the field of neutrons – largely nurtured by its 20-year relationship and training provision from the ILL – plays a key role in the future of European science.

Pan European Networks spoke to the ILL's director, Professor Helmut Schober about the support it has offered the Italian research community over the past two decades, as well as how the institute itself has developed over time.

## In a general sense, how could the evolution of the ILL since its inception be characterised? How have things such as the types of science being done and the countries taking advantage of ILL's services changed?

The ILL has seen itself as a pioneer in neutron science and technology since the very beginning and it has maintained a leading role over the years thanks to the constant modernisation of its infrastructure. The European scientific landscape has changed over time and the science performed at the ILL, which was essentially fundamental- and hard-physics-based at first, has evolved to address societal challenges. Over the last 20 years, for example, the use of our neutrons for 'soft physics' has increased – by up to 10% on average for biology, and 20% for soft condensed matter.



Professor Helmut Schober

At the same time, the ILL has adapted to a world where scientific collaboration is increasingly important. It has progressively extended its membership base to other European countries, and we have also gradually expanded access to our facility, now receiving users from about 40 countries across the world.

## Italy has been held up as an example of a country which has benefitted significantly from working with/at the ILL. What have been the biggest benefits and/or achievements to come out of this working arrangement? Are there other countries who have similarly benefitted?

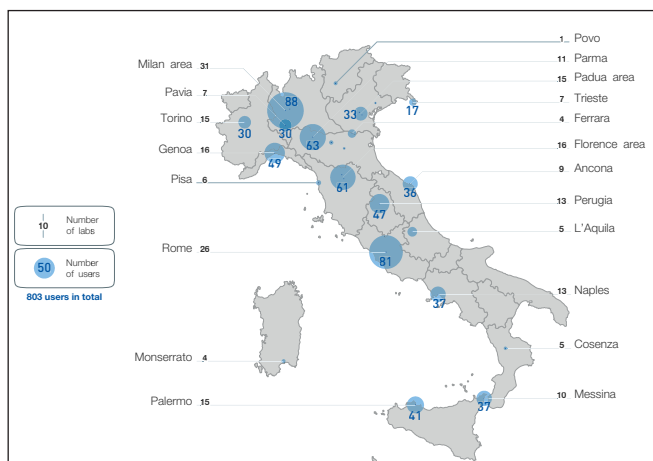
With no neutron source of their own, Italian scientists have maintained influence on global research by using the ILL's world-class facilities and expertise. Two of the 40 instruments at the ILL are operated by Italian teams. The ILL has helped to create Italy's outstanding expertise in the field of neutrons, which has been nurtured by its 20-year relationship with the ILL and the training opportunities the ILL offers. As a result, Italy is now playing a key role in the construction of Europe's new neutron source, the European Spallation Source.

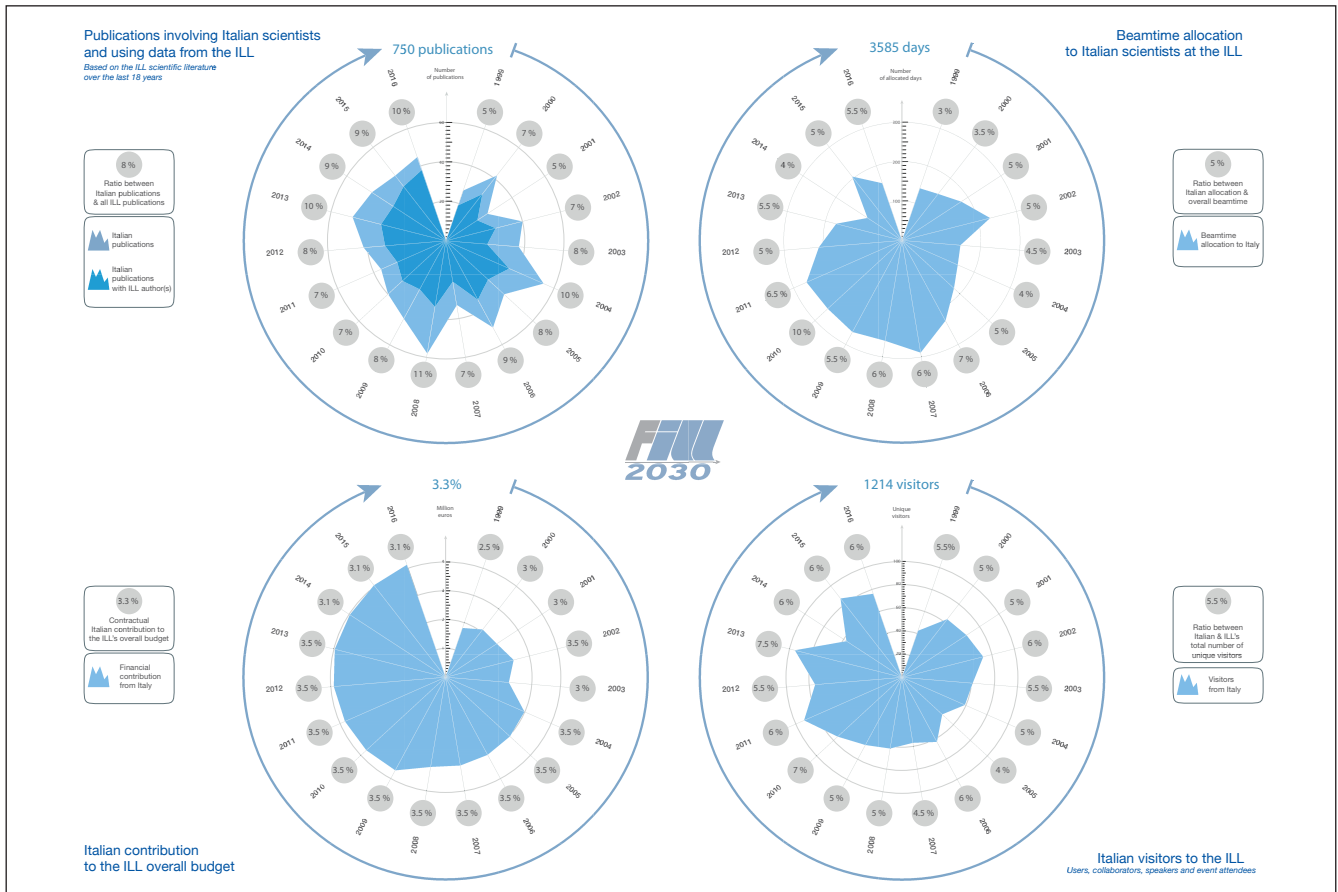
All our member countries, including those with national facilities, have benefited from their collaboration with the ILL. Take Spain, for example – which joined the ILL 30 years ago – another country which has drawn significant benefits from our productive long-term collaboration.

## How has the ILL helped in engaging with Italian students and young researchers? How important is this?

The training opportunities available at the ILL have made major contributions to the quality of Italy's scientific workforce. Alongside the Italian scientists working here, 25 Italian students have started their careers at PhD level at the ILL since the beginning of this century, and more than 300 Italian students

Based on proposals received at the ILL over the last ten years





have attended the Italian Neutron Scattering Society's schools at the ILL. Training young generations of scientists is crucial for the future of the European community of neutron users; it will ensure that Europe remains competitive internationally.

**Would an Italian effort to develop its own large-scale neutron source be a viable option for the country?**

In my opinion, every country seeking to maintain a high potential for technological innovation needs to provide its materials research community with access to a full suite of analytical tools, including neutrons. Given that some of these tools require substantial investment, it is only logical that we share the burden among different countries. Italy has access to neutrons via the ILL, but equally through participation in other sources, most noticeably the ISIS neutron and muon source in the UK and the future European Spallation Source (ESS) in Lund, Sweden.

However, it is also true that the big European installations will only develop their full potential if they are properly integrated into an ecosystem of smaller national sources. The southern European countries, and above all Italy and Spain, must therefore reflect on how

they can contribute strategically to this ecosystem. They both run national synchrotrons, but in the long run they could also envisage other large-scale facilities. For this they will have to maintain a strong and vibrant user community, hence the importance of remaining a strong partner of the ILL.

**Are there any plans to work as closely as this with any other European countries? Do such opportunities exist, perhaps, with nations in eastern Europe?**

The ILL's scientific partnerships cover about 90% of the user communities identified in Europe.

FILL2030 is an EU-funded project initiated this year to establish a business model which is sustainable in the long term. This involves attracting strong user communities and building up others in countries where they are starting to emerge.

To provide an example, Russia was a member of the ILL for many years and we are hoping to see it come back. We are also engaged in discussions with the historically strong Canadian community, and we are pursuing contacts with several eastern European countries that have burgeoning communities.

**Professor Helmut Schober**  
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<https://www.ill.eu/>