

**ETTORE MAJORANA FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE, ERICE (IT)**  
**“NEUTRON PRECESSION TECHNIQUES”**

**Directors of the Course: Peter Falus (ILL, Grenoble) and Klaus Habicht (HZB, Berlin)**

**1<sup>st</sup> – 8<sup>th</sup> July 2017**

**Application deadline: 10<sup>th</sup> June 2017**



Application is now open for the Master Class on “**NEUTRON PRECESSION TECHNIQUES**” (Directors of the Course: Peter Falus (ILL, Grenoble) and Klaus Habicht (HZB, Berlin), the IV<sup>th</sup> Course within the Erice School “**NEUTRON SCIENCE AND INSTRUMENTATION**” (Directors: Carla Andreani, Roberto Caciuffo and Robert McGreevy) which is the XVI<sup>th</sup> Edition of the School of Neutron Scattering (SoNS) “Francesco Paolo Ricci”. The Course will be held at the ETORE MAJORANA FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE, Erice (Sicily, IT), on the 1<sup>st</sup> - 8<sup>th</sup> July 2017.

The course “**Neutron Precession Techniques**” is organized as a master class and provides both, a coherent set of introductory lectures for PhD students or young researchers at the postdoctoral level and expert discussions led by senior scientists with the aim to exchange experience and develop novel instrumentation ideas. The specialized topic focusses on neutron instrumentation techniques which are based on the Larmor precession of the neutron magnetic moment in dedicated magnetic field arrangements and comprises neutron spin-echo techniques as

well as novel Larmor labelling methods such as SESANS, SEMSANS and MIEZE.

**Course Objectives:**

The use of the neutron spin precession in neutron scattering instrumentation, an idea introduced by Ferenc Mezei in the mid-seventies, led to the development of neutron spin-echo spectrometers, a class of neutron scattering instruments which allows to investigate dynamics in condensed matter on - by far - the longest time scales up to a few  $\mu$  s. This sophisticated concept has made seminal contributions to the field of polymer dynamics, spectroscopy of proteins and to our understanding of slow spin dynamics. It remains a unique and indispensable tool for quasielastic neutron scattering studies. Today, many more advanced polarized neutron scattering techniques exist which are based on neutron spin precession and manipulation: neutron resonance spin echo spectroscopy (NRSE), spin-echo small angle neutron scattering (SESANS) or Larmor diffraction, to name a few of them. These techniques, exploited at high -flux neutron sources, hold a huge potential for high-resolution spectroscopy and structural analysis. For good reason they are expected to lead to novel insights about the structure and dynamics of matter. It is the aim of this course to provide the fundamental concepts and the theoretical framework of neutron precession techniques in a series of introductory lectures as well as to provide a comprehensive overview of the state-of-the-art instrumentation. The course is addressed to young researchers, instrument and development scientists at international and national neutron facilities who have a basic understanding of neutron scattering but have less background in polarized neutron instrumentation. Graduate students or postdocs at universities with an interest in neutron instrumentation projects are also highly welcome. All participants are invited to take part in discussions about future avenues for neutron spin precession based instrumentation and novel instrument ideas.



The School is normally highly oversubscribed, so we encourage students to register early.

**Accommodation and Lectures** are at the **Ettore Majorana Foundation** (EMFCSC).

**For registration** send a ‘personal statement’ and a ‘statement from your supervisor’ to [Peter Falus](#) and [Klaus Habicht](#), and copy to [school secretariat](#). Please register at the School [website](#).