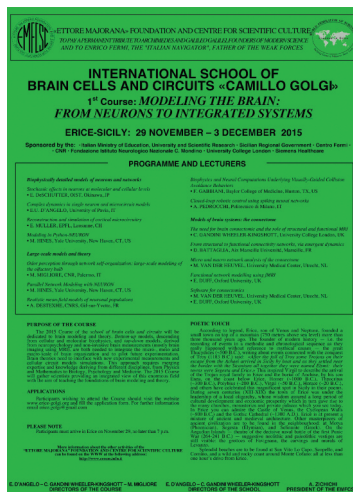


# The *Ettore Majorana* international science center launches the first course of its *Camillo Golgi* International School of Brain Cells and Circuits: modeling the brain



The *Ettore Majorana Foundation and Centre for Scientific Culture* has recently opened its *International School of Brain Cells and Circuits*, dedicated to Italian Nobel laureate, Camillo Golgi. The brain, with  $10^{12}$  neurons interacting through  $10^{15}$  synapses, is undoubtedly the most complex structure in the whole universe. Neurosciences are systematically tackling *brain functions at multiple levels of complexity, from cells to microcircuits to the whole brain*. Understanding the brain is a great challenge for mankind with social implications in the biomedical and technological fields. Confirmation of the importance of this area of research has recently been provided by the launch of the *Human Brain Project* in Europe and of the *Brain Active Map Project* in the USA, as well as the award of the 2014 Nobel Prize to neuroscientists.

The *School of Brain Cells and Circuits* will tackle hot topics in modern neuroscience. It aims to provide the foundations for understanding of this field, to fuel discussion and to encourage the emergence of a critical perspective in the new generation of neuroscientists. Our vision is that in order to explain brain functions, it is fundamental to integrate molecular and cellular knowledge into micro-

circuits and large-scale networks. To this end, we are launching the School's programme with a course on "*Modeling the brain: from neurons to integrated systems*".

The 2015 course, which has been coordinated by the *Ettore Majorana* center with the collaboration of IRCCS C. Mondino (Pavia) and Centro Fermi (Rome), will be devoted to brain modeling and theory. *Bottom-up* models, stemming from cellular and molecular biophysics, and *top-down* models, derived from neuropsychology and non-invasive brain measurements (mostly brain imaging using MRI), are both needed to integrate the micro-, meso- and macro-scales of brain organization and to drive future experimentation. Brain theories need to interface with new experimental measurements and simulations of cellular circuit models. This approach requires merging of expertise and knowledge from different disciplines: from physics and mathematics to biology, psychology and medicine. The 2015 course will gather together international scientists who will provide an integrated view of this vast field with the aim of teaching the foundations of brain modeling and theory.

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Information about the 2015 course can be found at: <http://www.eric-golgi.org>