



«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE
TO PAY A PERMANENT TRIBUTE TO ARCHIMEDES AND GALILEO GALILEI, FOUNDERS OF MODERN SCIENCE
AND TO ENRICO FERMI, THE "ITALIAN NAVIGATOR", FATHER OF THE WEAK FORCES



INTERNATIONAL SCHOOL OF NEUTRON SCIENCE AND INSTRUMENTATION

2nd Course: *DESIGNING AND BUILDING A NEUTRON INSTRUMENT*

ERICE-SICILY: 31 MARCH – 9 APRIL 2016

Sponsored by the: • Italian Ministry of Education, University and Scientific Research • Sicilian Regional Government

PROGRAMME AND LECTURERS

High-resolution backscattering spectrometer

K. HERWIG, Oak Ridge National Laboratory (ORNL), Knoxville, TN, US

Time-of-flight powder diffractometer

• K. ANDERSEN, European Spallation Source (ESS), Lund, SE

Spin-echo spectrometer

• R. PYNN, Indiana University, Bloomington, IN, US

Chopper spectrometer

• G. EHLERS, Oak Ridge National Laboratory (ORNL), Knoxville, TN, US

Small-angle neutron scattering instrument

• A. JACKSON, European Spallation Source (ESS), Lund, SE

Monochromatic powder diffractometer

• T. HANSEN, Institute Laue Langevin (ILL), Grenoble, FR

Imaging instrument

• D. JACOBSON, National Institute of Standards and Technology (NIST), Gaithersburg, MD, US

Imaging instrument

• D. HUSSEY, National Institute of Standards and Technology (NIST), Gaithersburg, MD, US

Chopper spectrometer

• G. EHLERS, Oak Ridge National Laboratory (ORNL), Knoxville, TN, US

Neutron shielding

• G. MUHRER, European Spallation Source (ESS), Lund, SE

Instrument engineering

• K. JONES, ISIS Spallation Neutron Source, Oxfordshire, UK

Sample environment

• G. LYNN, Oak Ridge National Laboratory (ORNL), Knoxville, TN, US

Neutron detectors

• G. GORINI, University of Milano-Bicocca, Milan, IT

Neutron moderators

• D. BAXTER, LENS Facility, Indiana University, Bloomington, IN, US

Origin of neutron sources. Prospects for future neutron facilities

• J. CARPENTER, Oak Ridge National Laboratory (ORNL), Knoxville, TN, US

Compact accelerator-driven neutron sources

• C. LOONG, University of Rome Tor Vergata, Rome, IT

Deep Inelastic Neutron Scattering

• R. SENESI, University of Rome Tor Vergata, Rome

PURPOSE OF THE COURSE

The School focuses on neutron instrumentation, mainly for large-scale facilities for compact neutron facilities. Students are selected for the course based on their need to utilize neutron instrument design techniques as part of their present and/or future research activities. The Course is aimed at young instrument and development scientists, engineers, and designers at international and national neutron facilities, although graduate students or postdocs at universities would also be welcomed. In addition to lectures on theory, sources, and neutron instrumentation, students will be tutored by world leading experts in the various scattering techniques including diffraction, quasi-elastic, inelastic and deep inelastic scattering, neutron imaging, small-angle scattering, reflectometry, and neutron-spin-echo. With a target audience of 25-30 students, the school is intended to promote activities in instrument design and form the next generation of instrument designers. School Objectives: Educate graduate students, early-career scientists and engineers on neutron scattering techniques with a focus on instrumentation; Foster interactions between students, research centres and university groups; Help train the next generation of instrument builders for today's and tomorrow's neutron facilities. The School will use a practical "hands-on" approach, centred around daily group tutorials in which neutron instruments are designed and project managed through to "completion". The programme will include introductory lectures on the principles of neutron sources and instrumentation, as well as evening lectures on particular highlight areas.

APPLICATIONS

Persons wishing to attend the Course should send a letter to the Director of the Course:

Professor Dr Ken Andersen
Instruments Div. Head, European Spallation Source ESS AB, Lund, SE
e-mail: kenandersen@ess.se – www.ess.se
Tel +46.(0)767.726740

PLEASE NOTE

Participants must arrive in Erice on March 31, no later than 7 p.m.

POETIC TOUCH

According to legend, Erice, son of Venus and Neptune, founded a small town on top of a mountain (750 metres above sea level) more than three thousand years ago. The founder of modern history — i.e. the recording of events in a methodical and chronological sequence as they really happened without reference to mythical causes — the great Thucydides (~500 B.C.), writing about events connected with the conquest of Troy (1183 B.C.) said: «After the fall of Troy some Trojans on their escape from the Achaes arrived in Sicily by boat and as they settled near the border with the Sicilians all together they were named Elymi: their towns were Segesta and Erice.» This inspired Virgil to describe the arrival of the Trojan royal family in Erice and the burial of Anchise, by his son Enea, on the coast below Erice. Homer (~1000 B.C.), Theocritus (~300 B.C.), Polybius (~200 B.C.), Virgil (~50 B.C.), Horace (~20 B.C.), and others have celebrated this magnificent spot in Sicily in their poems. During seven centuries (XIII-XIX) the town of Erice was under the leadership of a local oligarchy, whose wisdom assured a long period of cultural development and economic prosperity which in turn gave rise to the many churches, monasteries and private palaces which you see today. In Erice you can admire the Castle of Venus, the Cyclopean Walls (~800 B.C.) and the Gothic Cathedral (~1300 A.D.). Erice is at present a mixture of ancient and medieval architecture. Other masterpieces of ancient civilization are to be found in the neighbourhood: at Motya (Phoenician), Segesta (Elymian), and Selinunte (Greek). On the Aegadian Islands — theatre of the decisive naval battle of the first Punic War (264-241 B.C.) — suggestive neolithic and paleolithic vestiges are still visible: the grottoes of Favignana, the carvings and murals of Levanzo.

Splendid beaches are to be found at San Vito Lo Capo, Scopello, and Corino, and a wild and rocky coast around Monte Cofano: all at less than one hour's drive from Erice.

More information about the other activities of the
«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE
can be found on the WWW at the following address:
<http://www.cesem.infn.it>

K. ANDERSEN – K. HERWIG
DIRECTORS OF THE COURSE

I.S. ANDERSON – C. ANDREANI – R.G.M. CACIUFFO
DIRECTORS OF THE SCHOOL

A. ZICHICHI
PRESIDENT OF THE EMFCSC