



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



INTERNATIONAL SCHOOL OF FUSION REACTOR TECHNOLOGY

12th Course

SUPERCONDUCTING MAGNETS: CASE STUDIES

ERICE-SICILY: 8 – 16 SEPTEMBER 2009

Sponsored by the: • Italian Ministry of University and Research • Sicilian Regional Government
• Italian Agency for New Technologies, Energy and the Environment (ENEA) • University of Rome "Tor Vergata"

TOPICS AND LECTURERS

Issues on Magnet Design

• A. BONITO-OLIVA, Fusion for Energy, Barcelona, ES

Superferric Dipole for Pulsed Operation

LHC Magnet System Set-up

• L. BOTTURA, CERN, Geneva, CH

Grading of a High Field (hybrid) solenoid

• P. BRUZZONE, PSI, Villigen, CH

Heat Loads and Cryogenic Needs

• J.L. DUCHATEAU, CEA, Cadarache, FR

Magnet Technology for Accelerators

• S. GOURLAY, LBL, Berkeley, CA, US

Superconducting Billet Induction Heaters

• H. KRAUTH, Bruker Biospin, Hanau, DE

HTS: Application and Perspectives

• D. LARBALESTIER, FSU, Tallahassee, FL, US

Conductor Design Criteria and Technologies

• L. MUZZI, ENEA, Frascati, IT

Why Looking at Very High Field Magnets

• S. PRESTEMON, LBL, Berkeley, CA, US

Matching of Cryoplant Capability with Magnet Cooling Needs

• H. QUACK, Un. Dresden, DE

Magnet Systems in Fusion Reactors

• E. SALPIETRO, EFDA, Garching, DE

Test and qualification of magnet components: from strand to coil

• C. SBORCHIA, Fusion for Energy, Barcelona, ES

The USA DOE Program on Superconductivity

• B. STRAUSS, DOE, Washington, D.C., US

PURPOSE OF THE COURSE

Superconducting magnets play a crucial role in fusion reactor technology, due to the high magnetic fields required for plasma confinement and heating, combined with the need to keep as low as possible the electric power request.

This Course has the aim to get the students in with the issues related to the design of superconducting magnets for fusion. This is why, beside some general lectures, specific design projects of particular interest will be introduced by top-level international experts and solved interactively with the participants in order to give them a sort of field training.

To this purpose, the Course will include, after the lecture session, special seminars based on the presentation and solution of selected Case Studies.

We invite all the participants - if interested - to contact in advance dr. Antonio della Corte (antonio.dellacorte@enea.it - catia.melorio@enea.it) in order to be involved in one of the case studies development.

APPLICATIONS

Persons wishing to attend the Course should apply in writing to:

- Dr. Eng. Aldo PIZZUTO
c/o Mrs Maria Laura Sansovini
ENEA
Via E. Fermi, 45 - C.P. 65
00044 FRASCATI, Italy
Tel +39.06.94005602 – Fax +39.06.94005147
e-mail: sansovini@frascati.enea.it

specifying:

- full name, address, age, nationality;
- academic qualification, present position and affiliation;
- specific interest in the workshop.

- PLEASE NOTE

Participants should arrive in Erice on September 8, not later than 5 pm.

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 methodic 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 Achaei 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 Cornino, and a wild and rocky coast around Monte Cofano: all at less than one hour's drive from Erice.

More information about the «Ettore Majorana» Foundation and Centre for Scientific Culture can be found on the WWW at the following address:
<http://www.ccsem.infn.it>

Registration details and more information about the Course can be found on the WWW at the following address:
<http://www.isfirt-erice.enea.it>