



«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 NUCLEAR PHYSICS

32nd Course: PARTICLE AND NUCLEAR ASTROPHYSICS

ERICE–SICILY: 16 – 24 SEPTEMBER 2010

Sponsored by the: • Deutsche Forschungsgemeinschaft • European Physical Society
• Italian Ministry of University and Research • Sicilian Regional Government

TOPICS AND LECTURERS

Sources of Gravitational Waves

• N. ANDERSSON, University of Southampton, UK

Particle Dark Matter in the galactic halo

• R. BERNABEI, University "Roma 2", IT

Dark Matter Searches

• B. CABRERA, Stanford University, CA, US

Antimatter and Matter in the Universe

• P. CARLSON, University of Stockholm, Sweden

Is Dark Energy an Illusion?

• T. CLIFTON, University of Oxford, UK

Massive Black Holes: Observations, Properties and their History

• K. GEBHARDT, University of Texas, Austin, TX, US

Evolution of Massive Stars

• A. HEGER, University of Minnesota, Twin Cities, MN, US

Gravitational Wave Detectors

• J. HOUGH, University of Glasgow, Glasgow, UK

Determination of Reaction Cross Sections for the r-, s- and p-Processes

• F. KAEPPELER, KIT, Karlsruhe, DE

Nuclear Reactions and the Dynamics of explosive Star Scenarios

• K. LANGANKE, GSI, Darmstadt, DE

The Supernovae Ia and Dark Energy

• TBA

Description of Supernovae

• F.K. ROEPKE, MPI for Astrophysics, Garching, DE

Primordial Nucleosynthesis and the Early Universe

• K. SATO, University of Tokyo, JP

Hydrogen Burning and the CNO Cycle

• H. SCHATZ, Michigan State University, East Lansing, MI, US

PURPOSE OF THE COURSE

Particle and Nuclear Astrophysics was moving in the last ten years more and more in the focus of international interests. The number of scientists working on these topics is still increasing rapidly. This Erice School will have leading scientists reporting about the newest status and prospects in the following areas: Matter-Antimatter asymmetry in the Universe is a longstanding puzzle. But we had never so accurate data on this subject than today. For gravitational waves predicted by General Relativity we have only indirect evidence. The two-arm-Laser gravitational wave detectors seem to be close to finding direct evidence. Primordial nucleosynthesis and the photo and neutrino Cosmic Background radiation are corner stones of the cosmological models. Dark Matter and even more Dark Energy are still an unsolved problem. The course will also devote talks on star evolution, massive black holes, star burning, novae and supernovae and on the s-, on the r- and on the p-process of star burning. The Erice School 2010 will present results from the forefront of this rapidly evolving field and try to point to promising directions to find answers to the unsolved puzzles in Cosmology and Astrophysics.

APPLICATIONS

Persons wishing to attend the Course should use the on-line registration under:
<http://www.physik.tu-darmstadt.de/erice/> – <http://www.uni-tuebingen.de/erice/>
or apply in writing to:

- Professor Amand FAESSLER
Universität Tuebingen
Auf der Morgenstelle 14
D-72076 TUEBINGEN, Germany
Tel +49.7071.2976370 – Fax +49.7071.295388
e-mail: erice2008@physik.tu-darmstadt.de

They should specify:

- date and place of birth together with present nationality;
- degree and other academic qualifications;
- present position and place of work;
- postal and e-mail address.

More information about the school and application forms for fellowships can be found under the same web address.

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>

- **PLEASE NOTE**
Participants must arrive on September 16, not later than 7 pm.