«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 SUBNUCLEAR PHYSICS

42nd Course: *HOW AND WHERE TO GO BEYOND THE STANDARD MODEL*

ERICE-SICILY: 29 AUGUST - 7 SEPTEMBER 2004

Sponsored by the: • Academies of Sciences of Estonia, Georgia, Lithuania, Russia and Ukraine • • Chinese Academy of Sciences • Commission of the European Communities • European Physical Society • • Italian Ministry of Education, University and Scientific Research • Sicilian Regional Government • • Weizmann Institute of Science • World Federation of Scientists • World Laboratory

PROGRAMME AND LECTURERS

MINI-COURSES ON BASICS

Lattice QCD
• R.D. KENWAY, University of Edinburgh, Scotland, UK

Quark-Gluon Plasma
• L. MAIANI, University of Rome "La Sapienza", Rome, I

Present Status of Supersymmetry
• S. FERRARA, UCLA, Los Angeles, CA, USA

Supersymmetry: Phenomenology Versus Experiments
• A. ZICHICHI, CERN, Geneva, CH; INFN & University of Bologna, I

Status of Inflationary Theory
• A.H. GUTH, MIT, Cambridge, MA, USA

SEMINARS ON HOT THEORETICAL TOPICS

How can QCD Become Supersymmetric
• G. VENEZIANO, CERN, Geneva, CH

Unusual States and Regimes in QCD
• F. WILCZEK, MIT, Cambridge, MA, USA

SPECIAL SESSIONS FOR NEW TALENTS

HIGHLIGHTS FROM

BNL-RHIC
• M. GYULASSY, Columbia University, New York, NY, USA

SLAC
• R.E. TAYLOR, SLAC, Stanford, CA, USA

FERMILAB
• J. PEOPLES, FNAL, Batavia, IL, USA

DESY-HERA
• G. WOLF, DESY, Hamburg, D

CERN
• R. AYMAR, CERN, Geneva, CH

VIRGO
• A. GIAZOTTO, INFN, Pisa, I

SUPERKAMIOKANDE
• M. KOSHIBA, Kamioka Observatory, Gifu Ken, J

AMS
• S.C.C. TING, MIT, Cambridge, MA, USA

Sessions for New Talents: One of the aims of the School is to encourage and promote young physicists to achieve recognition at an international level. There will be poster sessions whereby each student has the privilege of presenting the results of current studies and interacting with other participants to their mutual benefit.

Each student may also propose a contribution for open presentation. The Board of Lecturers and Invited Scientists will select the best proposals. Priority will be given to new material of either an experimental or theoretical nature, especially if the candidate has made an important contribution to the results to be presented. A review paper has lower priority and, as before, will only be selected if the candidate can point out some new features in the field reviewed. Due to the large number of students and the limited time available, it is obvious that only selected "New Talents" can be given the possibility of making themselves known. The selection will be based solely on "scientific excellence", without favour to geographical distribution, the laboratory or the university of origin. These Special Sessions will be chaired by **Gerardus 't Hooft**.

Invited Scientists: A group of distinguished physicists has been invited to contribute to the lively intellectual atmosphere of the School by participating in the discussions following the Lectures. Moreover they will take part in the selection of the "New Talents", in the choice of the Best Student and in the award of the various scholarships open for competition.

PURPOSE OF THE SCHOOL

Phenomenological and theoretical developments in Gauge Theories, as well as in global and local Supersymmetry and in all the other sectors of Subnuclear Physics, will be the centre of this year's Course where the experimental highlights from the most relevant sources of new data will be presented and discussed. An original feature of the School is the **Special Sessions for New Talents** , a selected number of whose contributions will be published in the proceedings. As it is in the tradition of this School — the first and the oldest Subnuclear one in the world — the Discussion Sessions represent the unique occasion for young talents to show their ability in contributing to the development of our understanding of the frontier problems in Subnuclear Physics.

DIPLOMAS for Best Students

The following Diplomas have been established in honour of, and named after, the late physicists:

JOHN S. BELL	GUNNAR KÄLLEN	BRUNO ROSSI
PATRICK M.S. BLACKETT	GIUSEPPE P.S. OCCHIALINI	ANDREIJ D. SAKHAROV
JAMES CHADWICK	BRUNO PONTECORVO	VICTOR F. WEISSKOPF
PAUL A.M. DIRAC	ORESTE PICCIONI	EUGENE P. WIGNER
VLADIMIR N. GRIBOV	ISIDOR I. RABI	BJORN H. WIIK
ROBERT HOFSTADTER	GIULIO RACAH	CHIEN SHIUNG WU

These Diplomas will be awarded at the end of the Course by a Committee composed of the Lecturers and the Invited Scientists.

APPLICATIONS

Interested candidates should send a letter to the Director of the School:

Professor Antonino ZICHICHI
CERN
CH-1211 GENEVA 23, Switzerland

Needed:

i) date of birth and present activity;
ii) nationality;
iii) letter of recommendation from a senior physicist.

To honour the memory of Victor Weisskopf, the WFS has established a commemorative fund to support needy students.

Students in need of financial support should apply for the **Victor F. Weisskopf** commemorative fund specifying their needs (i.e. participation fee only or also travel expenses) at the time of the application to the School.

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 Sicanians 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.

• *PLEASE NOTE*

Participants must arrive in Erice on August 29, not later than 5 p.m.

More information about the other activities of the Ettore Majorana Centre can be found on the WWW at the following address:
http://www.ccsem.infn.it

G. 't HOOFT AND A. ZICHICHI
DIRECTORS OF THE COURSE

A. ZICHICHI
DIRECTOR OF THE SCHOOL