



GALILEO GALILEI FOUNDATION
WORLD FEDERATION OF SCIENTISTS
ETTORE MAJORANA FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE

GALILEO GALILEI CELEBRATIONS
Four Centuries Since the Birth of Modern Science

INTERNATIONAL SCHOOL OF SUBNUCLEAR PHYSICS

37th Course

BASICS AND HIGHLIGHTS IN FUNDAMENTAL PHYSICS

ERICE-SICILY: 29 AUGUST - 7 SEPTEMBER 1999

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 • Italian Ministry of University and Scientific Research • Sicilian Regional Government •
• Weizmann Institute of Science • World Laboratory

PROGRAMME AND LECTURERS

OPENING LECTURE

The Holographic Principle

• G. 'Y HOOFDT, Rijksuniversiteit Utrecht, Utrecht, NL

MINI-COURSES ON BASICS

Bread and Butter Standard Model

• Z. KUNSZT, ETH, Zürich, CH

New Physics behind the Standard Model's door?

• A. MASIERO, SISSA, Trieste, I

Inflation, the Microwave Background, and Galaxies

• E.W. KOLB, Fermilab, Batavia, USA

String Theory: the Basic Ideas

• B. GREENE, Columbia University, New York, USA

Non-Perturbative Gauge Dynamics and Strings

• E. RABINOVICI, The Hebrew University, Jerusalem, Israel

EXPERIMENTAL HIGHLIGHTS FROM

LEP

• U.F. BECKER, MIT, Cambridge, USA

HERA

• A. WAGNER, DESY, Hamburg, D

FERMILAB

• J. FEOPLES, Fermilab, Batavia, USA

SUPERKAMIOKANDE

• Y. TOTSUKA, University of Tokyo, Kamioka, J

THE PROBLEM OF (g'/c)

• A round table discussion with T.D. LEE, G. 'Y HOOFDT and the representatives of the experimental groups from CERN and Fermilab

THE GLORIOUS DAYS OF PHYSICS

- *A tribute to Bjorn H. Witte: the man, his physics, his projects**
- K. JOHNSON, CERN, Geneva, CH
- H. WENNINGER, CERN, Geneva, CH
- G. WOLF, DESY, Hamburg, D

THEORETICAL HIGHLIGHTS

Dissipative, Deterministic Quantum Gravity

• G. 'Y HOOFDT, Rijksuniversiteit Utrecht, Utrecht, NL

Alain Connes' Derivation of the Standard Model

• R. BROUT, ULB, Brussels, B

Large Internal Dimensions and New Physics at the TeV scale

• J. MARCH-RUSSELL, CERN, Geneva, CH

String Cosmology: Theoretical Motivations and Observable Relics

• G. VENEZIANO, CERN, Geneva, CH

Primordial Inflation

• F. ENGLERT, ULB, Brussels, B

THE FUTURE AND THE NEW PROJECTS

LHC

• L. MAJANI, CERN, Geneva, CH

The ELN Project

• A. ZICHICH, INFN & University, Bologna, I and CERN, Geneva, CH

SPECIAL SESSIONS FOR NEW TALENTS

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

Purpose of this year's School is to focus attention on the basic unity of fundamental physics both at the theoretical end and the experimental level. Experiments at the highest energies or at the largest attainable distances in the Cosmos can shed important complementary information on Physics at the Subnuclear level. A round table discussion on (G'/c) will focus on the correlation between flavour mixing and CP breaking first pointed out by T.D. Lee and now under scrutiny by G. 'Y Hoop. Participants are reminded that the discussions are the greatest attraction of the School.

Special Sessions for New Talents. A series of special sessions will be devoted to young physicists who can present original pieces of work, or review lectures on topics that they consider particularly interesting. Selection will be made on the basis of the proposed topic of presentation and the recommendation by a distinguished physicist.

APPLICATIONS

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

Professor Antonio ZICHICH
CERN
CH-1211 GENEVA 23, Switzerland

specifying:

- i) date of birth and present activity;
- ii) nationality.

Please enclose a letter of recommendation from the group leader or the Director of the Institute or from a senior physicist.

PLEASE NOTE

Participants must arrive in Erice on August 29, not later than 3 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.cern.ch/it>

G. 'Y HOOFDT, G. VENEZIANO AND A. ZICHICH
DIRECTORS OF THE COURSE

FOETIC TOUCH

According to legend, Erice, son of Venus and Neptune, founded a small town on top of a mountain (720 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 the great Sicily (~480 B.C.) said: "After the fall of Troy some Trojans on their escape from the Achaean arrived in Sicily by boat and as they settled near the border with the Sicanius all together they were named Elymici. Their towns were Segesta and Erice". This legend, Virgil to describe the arrival of the Trojan royal family in Erice and the burial of Anchises, by his son Eneas, on the coast below Erice. Homer (~1000 B.C.), Theocritus (~300 B.C.), Polybius (~200 B.C.), Virgil (~50 B.C.), Horace (~50 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 ensured 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 Visconti, 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 manifestations of ancient civilization are to be found in the neighbourhood: at Morya (Phoenician), Segesta (Elymian), and Selinunte (Greek). On the Aeolian Islands — theatre of the decisive naval battle of the first Punic War (264-241 B.C.) — suggestive archaic and prehistoric vestiges are still visible: the groves of Favignone, the carvings and murals of Levanzo.

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

SCHOLARSHIPS

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

JORRI S. BELL	ROBERT HOFFSTADTER	BRUNO BOSSI
PATRICK M.S. BLACKETT	GRINAR KALESI	ANDREI D. SAKHAROV
JAMES CHADWICK	GIUSEPPE P.S. OCCHIALINI	RUN J. SAKURAI
AMOS DE SHALIT	BRUNO PONTECORVO	EUGENE P. WIGNER
PAUL A.M. DIRAC	ISIDOR I. RABBI	BORIS H. WILK
VLADIMIR N. GIBBOV	GIULIO RACAH	CHEN SHUN-WEI

The scholarships cover registration fees and full board and lodging in Erice. In order to allow a more direct judgement of all applicants these scholarships will be awarded at the end of the Course by a Committee composed of the Lecturers and the Invited Scientists.

A. ZICHICH
DIRECTOR OF THE SCHOOL