



GALILEO GALILEI FOUNDATION
WORLD FEDERATION OF SCIENTISTS
ETTORE MAJORANA CENTRE FOR SCIENTIFIC CULTURE
INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS

400th Anniversary

of the first great Discovery of Modern Science: 1591-1991

Author: Galileo Galilei

$$m_i \equiv m_g$$

INTERNATIONAL SCHOOL OF SUBNUCLEAR PHYSICS

29th Course: PHYSICS AT THE HIGHEST ENERGY AND LUMINOSITY:

TO UNDERSTAND THE ORIGIN OF MASS

ERICE-SICILY: 14 - 22 JULY 1991

In collaboration with the World Laboratory

and under the auspices of the Presidency of the Council of Ministers of Italy

Sponsored by the • Chinese Academy of Sciences • European Physical Society
• Italian Ministry of Education • Italian Ministry of University and Scientific Research
• Sicilian Regional Government • USSR Academy of Sciences • Weizmann Institute of Science

PROGRAMME AND LECTURES

OPENING LECTURE

The Problem of Mass: from Galilei to Higgs
• L.B. OKUN, ITEP, Moscow, USSR

QUANTUM CHROMO DYNAMICS

Lattice QCD
• N. CABIBBO, INFN and University of Rome, Italy
QCD Jet Phenomenology
• Yu. DOKSHITZER, Leningrad Inst. of Nuc. Physics, Gatchina, USSR

THEORETICAL LECTURES FROM 10 TO 200 TeV

The Standard Model and Beyond
• J. ELLIS, CERN, Geneva, CH
New Phenomena at 200 TeV
• R. PECCEI, University of California, Los Angeles, USA
Quantum Symmetries of String Vacua
• S. FERRARA, CERN, Geneva, CH and UCLA, CA, USA
Strings and Fivebranes up to 200 TeV
• M. DUFF, Texas A&M University, College Station, TX, USA

REVIEW LECTURES

Experimental Results from LEP
• S.C.C. TING, Cambridge, MA, USA and CERN, Geneva, CH
Theoretical Implications of LEP Results
• G. ALTARELLI, CERN, Geneva, CH
Novel Neutrino Physics
• D.H. PERKINS, Oxford University, UK
Physics Results from FNAL
• J. PEOPLES, FNAL, Batavia, IL, USA

THE FUTURE OF HIGH ENERGY PHYSICS

Physics at LHC
• C. RUBBIA, CERN, Geneva, CH
The Physics Programme of the SSC
• F. GILMAN, SSC Laboratory, Dallas, TX, USA
How to Reach Top Luminosities for ELOISATRON
• W.A. BARLETTA, LLNL, Livermore, CA and UCLA, CA, USA
New Detectors for Supercolliders: LAA
• A. ZICHICHI, CERN, Geneva, CH

CLOSING LECTURE

The Origin of Mass
• P.W. HIGGS, University of Edinburgh, UK

PURPOSE OF THE SCHOOL

The energy level has been the most important parameter in taking decisive steps towards a deeper and wider understanding of the fundamental laws of Nature. This year the School - in the framework of the Galilean Celebrations - is devoted to the study of present-day physics results, with the aim of extending our knowledge to the highest possible limits, at which experiments can be performed, in the near or far future. The focus will be on understanding the origin of mass. In particular, the existence of the Superworld, so much discussed in previous years (1986-87-88) will be analyzed in terms of the basic parameters now available with high precision, thanks to LEP data. The only condition in the lectures and discussions being that, sooner or later, whatever is being thought or discussed will be subject to an experimental check.

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 great historian Thucydides (~500 B.C.) said that the Elymi - founders of Erice - were survivors of the destruction of Troy. Ancient historians agreed that Erice was the oldest city in Europe.

Hauser (~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. 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). In 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 at San Vito Lo Capo, Scopello, and Corrinno, and a wild and rocky coast around Monte Cofano: all at less than one hour drive from Erice.

PARTICIPATION

By Invitation

SCHOLARSHIPS

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

JOHN S. BELL	PAUL A.M. DIRAC	ISIDORE I. RABI
PATRICK M.S. BLACKETT	ROBERT HOFSTADTER	GIULIO RACAH
JAMES CHADWICK	GUNNAR KALLÉN	ANDREI D. SAKHAROV
AMOS DE-SHALIT	ANDRÉ LAGARRIGUE	JUN J. SAKURAI

The scholarships cover registration fee and full board and lodging in Erice. They will be awarded in consultation with the Board of Lecturers at the end of the Course, in order to allow a more direct judgement of all the applicants.

PLEASE NOTE

Participants must arrive in Erice on July 14, not later than 5 p.m.

A. ZICHICHI - DIRECTOR