



«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 ON ASTROPHYSICAL RELATIVITY «JOHN ARCHIBALD WHEELER»

1st Course: DEVELOPMENTS OF 50 YEARS IN ASTROPHYSICAL RELATIVITY: FRAME-DRAGGING, GRAVITATIONAL-WAVES AND GRAVITATIONAL TESTS

ERICE-SICILY: 31 MAY - 8 JUNE 2006

Sponsored by the: • Italian Ministry of Education, University and Scientific Research • Sicilian Regional Government
• University of Texas at Austin • University of Maryland Baltimore County

PROGRAMME AND LECTURERS

General Relativity and John Archibald Wheeler
Initial Value Problem
Worm Holes
Gravitational Waves
Computational Relativity
LIGO
LISA
VIRGO
Bar Detectors
Frame Dragging and Lense-Thirring Effect
Measurement of Lense-Thirring Effect
Gravity Probe-B
LAGEOS satellites
Confrontation of Relativity with Experiments
Gravitational Tests

- N. ASHBY, University of Colorado, Boulder, CO, USA
- P. BENDER, University of Colorado, Boulder, CO, USA
- M. CERDONIO, University of Padova, I
- I. CIUFOLINI, University of Lecce, I
- F. EVERITT, Stanford University, CA, USA
- A. GIAZOTTO, INFN, Pisa, I
- L. GRISHCHUK, University of Wales, Cardiff, UK & Moscow University, RU
- R. MATZNER, University of Texas, Austin, TX, USA
- W. MILLER, Florida Atlantic University, FL, USA
- C. MISNER, University of Maryland, College Park, MD, USA
- K. NORDTVEDT, Montana State University, Bozeman, MT, USA
- I. NOVIKOV, Niels Bohr Institute, Copenhagen, DK
- E.C. PAVLIS, University of Maryland, Baltimore County, MD, USA
- H. PFISTER, University of Tübingen, D
- B. SCHUTZ, Albert Einstein-Max Planck Institute, Potsdam, D
- G. VILASI, University of Salerno, I
- J. YORK, Cornell University, NY, USA
- C. WILL, Washington University, St. Louis, MO, USA

PURPOSE OF THE COURSE

Observational and experimental data being obtained, or soon to be obtained, are changing our view of the universe. General Relativity is a fundamental key for the understanding of these observations and its theory is undergoing a continuing enhancement of its intersection with observational and experimental data. These data include direct observations and experiments carried out in our solar system; among which there are direct gravitational wave astronomy, frame dragging and tests of gravitational theories from solar system and spacecraft observations.

The field of study of the course keeps the gravitational aspect of the science to the front. Focus for this program is provided by tracking the work of the person for whom the school is named: Professor John Archibald Wheeler, of Princeton University and The University of Texas. A very substantial component of Professor Wheeler's work (from the mid-1950s) concerned the understanding of General Relativity. This will be the first of a series of courses exploring John's seminal and enduring contributions in relativistic astrophysics.

The first course of the "International School on Astrophysical Relativity «John Archibald Wheeler»" will present lectures on: the General Theory of Relativity and Wheeler's influence; recent developments in the confrontation of Relativity with experiment; the theory describing gravitational radiation, and its detection in earth-based and space-based interferometer detectors and in Earth based bar detectors; the mathematical description of the initial value problem in Relativity and applications to modeling gravitational wave sources via computational Relativity; the phenomenon of frame dragging and its measurement by satellite observations. All of these areas were of direct interest to Professor John A. Wheeler and were seminally influenced by his ideas.

APPLICATIONS

Interested candidates should send a letter to the Directors of the Course:

APPLICATIONS

Professor Ignazio CIUFOLINI
Dipartimento d'Ingegneria dell'Innovazione - Università di Lecce
Via Monteroni - 73100 LECCE, Italy
Tel +39.380.3070772 - Tel +39.0832.297246 - e-mail: ignazio.ciufolini@unile.it

US APPLICATIONS

Professor Richard MATZNER
Physics Department - University of Texas at Austin
AUSTIN, TX 78712, USA
Tel +1.512.4715062 - Fax +1.512.4710890 - e-mail: matzner2@physics.utexas.edu

specifying:

- date and place of birth, together with present nationality;
- affiliation;
- address, e-mail 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 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.

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 May 31, not later than 7 pm.

I. CIUFOLINI - R. MATZNER
DIRECTORS OF THE COURSE

I. CIUFOLINI - R. MATZNER
DIRECTORS OF THE SCHOOL

A. ZICHICHI
EMFCSC PRESIDENT AND DIRECTOR OF THE CENTRE