



«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 SOLID STATE PHYSICS

48th Course: SUPERSTRIPES 2010 QUANTUM PHENOMENA IN COMPLEX MATTER

ERICE-SICILY: 19 – 25 JULY 2010

Sponsored by the: • Italian Ministry of Education, University and Scientific Research • Sicilian Regional Government

TOPICS AND LECTURERS

Striped phases in complex systems

Phase separation

Heterogeneity in quantum condensates

Anisotropic superconductors

Competition between magnetism and superconductivity

Multigap superconductivity

Multiband superconductivity

Two-gap superconductivity

Granular superconductivity

Feshbach resonances in superlattices

Insulator to superconductor transition

Quantum size effects

Polaron liquids

Pairing mechanisms

Quantum phase transitions

Pnictides

Cuprates

Manganites

Diborides

Graphene

Intercalated graphite

New complex materials

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- I. EREMIN, Ruhr-University, DE
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- A. MOREO, University of Tennessee, Knoxville, TN, US
- J. MUSTRE de LEON, Cinvestav-Merida, MX
- M. ODA, Hokkaido University, JP
- C. PANAGOPOULOS, Singapore University, SG
- D. PAVUNA, EPF Lausanne, CH
- T. PERRING, ISIS Fac., CCLRC RAL, UK
- W. PRELLIER, Caen University, FR
- C. RENNER, University of Geneva, CH
- S. SUGAI, Nagoya University, JP
- Y. TAKADA, The University of Tokyo, JP
- H. TAKAHASHI, Nihon University, Tokyo, JP
- Y.J. UEMURA, Columbia University, New York, NY, US
- M. v. ZIMMERMAN, Hasylab at Desy, DE
- B. WELLS, University of Connecticut, Storrs, CT, US
- J. ZAAANEN, University of Leiden, NL
- N.D. ZHIGADLO, ETH, Zürich, CH

PURPOSE OF THE COURSE

The purpose of this Course is to bring together scientist of different point of views to contribute for the critical assesment of existing knowledge in the field of high Tc superconductivity. A large number of experimental results have been accumulated on different aspects of the high temperature superconductors cuprates, diborides, FeAs layered superconductors and other systems with the competing electronic degrees of freedom and showing multiscale phase separation. The aim of this course is to promote discussion looking to a unifying scenario for high temperature superconductivity.

The discussion will be focused on understanding the mechanisms for evading temperature decoherence effects in quantum condensates. The approach will be to direct future research in the field to search new materials with unique properties and to identify materials parameters for controlling and manipulating the superconducting phase for opening new perspectives in this field.

APPLICATIONS

Persons wishing to attend the School are requested to consult the Course web page or to write (preferably by e-mail) to:

- Professor Antonio BIANCONI
Dipartimento di Fisica – Università di Roma La Sapienza
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They should specify:

- date and place of birth, together with present nationality, current address, telephone number, and e-mail;
- degree and other academic qualifications;
- present position, place of work, and current research activities.

- PLEASE NOTE
Participants should arrive in Erice on 25 July not later than 5 pm.

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 Anchises, by his son Aeneas, 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>

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<http://www.superstripes.com>