



«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE
TO PAY A PERMANENT TRIBUTE TO ARCHIMEDES AND GALILEO GALILEI, FOUNDERS OF MODERN SCIENCE
AND TO ENRICO FERMI, THE "ITALIAN NAVIGATOR", FATHER OF THE WEAK FORCES



INTERNATIONAL SCHOOL OF SOLID STATE PHYSICS

75th Workshop: *MAJORANA FERMIONS AND TOPOLOGICAL MATERIALS SCIENCE*

ERICE-SICILY: 21 – 27 JULY 2018

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

PROGRAMME AND LECTURERS

Majorana Fermions

Topological Superconductors

Induced Topological Superconductivity

Topological Condensates (BEC-BCS crossover, Cold atoms, Helium)

Dirac and Weyl Materials

- D. AGTERBERG, University of Wisconsin, Milwaukee, WI, US
- J. ALICEA, Caltech, Pasadena, CA, US
- Y. ASANO, Hokkaido University, JP
- A. BIANCONI, RICMASS, Rome, IT
- S. BORISENKO, IFW, Dresden, DE
- A. CAVIGLIA, TU Delft, NL
- M. CUOCO, CNR - SPIN & University of Salerno, IT
- T. DIETL, Mag Top, Warsaw, PL
- M. ESCHRIG, Royal Holloway, University London, UK
- S. FUJIMOTO, Osaka University, JP
- V. HIZNJAKOV, Tartu University, Tartu, EE
- S. KASAHARA, Kyoto University, JP
- N. KAWAKAMI, Kyoto University, JP

- S. KOMORI, Cambridge University, UK
- T. KONDO, ISSP, The University of Tokyo, JP
- Y. MAENO, Kyoto University, JP
- D. MANDRUS, University of Tennessee, Knoxville, TN, US
- J. MATSUDA, Kyoto University, JP
- T. MIZUSHIMA, Osaka University, JP
- L. MOLENKAMP, University of Würzburg, DE
- K. MURAKI, NTT Basic Research Laboratories, Atsugi, JP
- F. NOGUERIA, IFW, Dresden, DE
- K. NOMURA, Tohoku University, Sendai, JP
- C. ORTIX, Institute of Theoretical Physics, Utrecht University, NL
- G. PANACCIONE, CNR-IOM & Elettra, Trieste, IT
- M. SATO, Yukawa Inst. for Theoretical Physics, Kyoto University, JP
- M. SHI, Paul Scherrer Institute, Villigen, CH
- S. SOUMA, Tohoku University, Sendai, JP
- M. UEDA, The University of Tokyo, Tokyo, JP
- A. VECCHIONE, CNR - SPIN & University of Salerno, IT
- S. YONEZAWA, Kyoto University, JP
- S.C. ZHANG, Stanford University, Stanford, CA, US

PURPOSE OF THE WORKSHOP

Following the initial outbreak of research triggered by the discovery of topological insulators just a decade ago, the concept of topology continues to drive the expansion of the frontiers in modern condensed matter physics. Target topological materials of current interests include various forms of superconductivity, novel semimetals, and correlated magnets. Efforts to firmly establish Majorana particles in condensed matter also extends to these variety of topological materials. The aim of this workshop is to bring together active scientists in this field to discuss recent advances in topological materials science, thereby to identify the most important questions and find directions to answer them. The scientific focus of this workshop will be on 1. Majorana Fermions, 2. Topological Superconductors, 3. Induced Topological Superconductivity, 4. Topological Condensates (BEC-BCS crossover, Cold atoms, Helium), and 5. Dirac and Weyl Materials.

APPLICATIONS

Persons wishing to attend this Workshop should send an application, preferably by electronic mail, to:

Professor Antonio BIANCONI
email: antonio.bianconi@ricmass.eu

Specifying:

- i) Date and place of birth together with present nationality
- ii) Present position and place of work
- iii) An abstract, if they wish to give a contribution (oral or poster).

PLEASE NOTE

Participants must arrive in Erice on July 21, no later than 7 p.m.

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 other activities of the
«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE
can be found on the WWW at the following address:
<http://www.ccsem.infn.it>