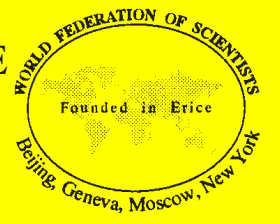




«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE  
TO PAY A PERMANENT TRIBUTE TO GALILEO GALILEI, FOUNDER OF MODERN SCIENCE  
AND TO ENRICO FERMI, THE "ITALIAN NAVIGATOR", FATHER OF THE WEAK FORCES



# INTERNATIONAL SCHOOL OF SOLID STATE PHYSICS

## 50th Course

# SHELL EFFECTS IN FINITE QUANTUM SYSTEMS

ERICE-SICILY: 25 – 31 JULY 2010

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

### TOPICS AND LECTURERS

*Metal nanoclusters*

*Nuclei*

*Atoms and quantum gases*

*Quantum dots and nanowires*

*Superfluid nanodroplets*

*Droplets and stabilities*

*Semiclassical and chaotic dynamics*

*Thermodynamics of finite systems*

*Collective excitations*

- G. BENEDEK, University of Milano-Bicocca, IT
- O. BOHIGAS, University of Paris-Sud, Orsay, FR
- L. GAUDEFROY, CEA/DAM Ile de France, FR
- C. GUET, CEA Saclay, FR
- K. HANSEN, University of Gothenburg, SE
- W. de HEER, Georgia Tech, Atlanta, GA, US
- B. von ISSENDORFF, University of Freiburg, DE
- V.V. KRESIN, University of Southern California, Los Angeles, CA, US
- A. OBERTELLI, CEA Saclay, FR
- M. RAIZEN, The University of Texas at Austin, TX, US
- S. REIMANN, Lund Institute of Technology, SE
- J. van RUITENBEEK, Leiden University, NL

### PURPOSE OF THE COURSE

The understanding of atomic shell structure laid the foundation for the nuclear shell model, and twenty-five years ago came the seminal observation of electronic shells in metal nanoclusters. The School will mark the anniversary of this discovery by highlighting the unity of physical principles that manifest themselves in a variety of systems: atoms, nuclei, clusters, confined quantum gases and fluids, nanostructures, quantum dots, nanowires. Despite the differences in energy scales and other characteristics, such systems are strongly influenced by the quantization of motion of their constituents. There are further productive connections with such fields as semiclassical quantization and quantum chaos. Moreover, these quantum-scale phenomena have important practical implications. This week-long Course will offer lectures presented by leading experts in their fields, highlighting the diversity and the underlying universality of the physical phenomena. Graduate and diploma students, postdoctoral fellows, researchers entering these fields, and anyone who is interested in the interdisciplinary richness of the subject are invited to attend. In addition to the lectures, there will be poster sessions where the attendees will be encouraged to present their own research, and ample opportunity for individual discussions.

### APPLICATIONS

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

- Professor Vitaly V. KRESIN  
Department of Physics  
University of Southern California  
Los Angeles, CA 90089-0484, US  
email: [ShellEffects@usc.edu](mailto:ShellEffects@usc.edu)

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.

**Closing date for application: 15 June 2010**

### 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>

**More information about this Course can be found on the WWW at the following address:**  
<http://physics.usc.edu/Shells>

Junior participants are requested to attach a recommendation letter. Participants interested in presenting their own work in the poster sessions are requested to submit also a one-page abstract in pdf format. Participation in the Course and poster presentations are limited and subject to acceptance by the Admission Committee, composed by the Directors of the Course, of the School and of the President of the EMFCSC. Depending on the availability of funds a limited number of participation grants may be delivered to deserving junior participants or other participants from less-favoured areas, based on a well motivated and documented request. Junior participants from East-European countries of Former Soviet Union are encouraged to apply for a Mikhail Teplov Scholarship of the World Federation of Scientists, by attaching a short CV with the list of publications, a recommendation letter and the abstract of their presentation.