INTERNATIONAL SCHOOL OF MATHEMATICS

«G. STAMPACCHIA»

Workshop: **New Trends in Propagation of Linear and Nonlinear Wave Phenomena**

ERICE-SICILY: SEPTEMBER 2 – 7, 2019

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Topics and Lecturers

Dispersive Partial Differential Equations
Hamiltonian Partial Differential Equations with Random Data
Birkhoff Normal Forms and Kolmogorov-Arnold-Moser Theory
Invariant and Quasi Invariant Measures
Water Waves

- Adami Riccardo (Politecnico di Torino, Italy)
- Banica Valeria (Université Paris VI, France)
- Bambusi Dario (Università di Milano, Italy)
- D'Ancona Piero (Università di Roma "Sapienza", Italy)

- Delort Jean-Marc (Université Paris XIII, France)
- de la Hoz Francisco (Universidad del Pais Vasco, Spain)
- Dovetta Simone (Politecnico di Torino, Italy)
- Fanelli Francesco (Université Claude Bernard Lyon 1, France)
- Fanelli Luca (Università di Roma “Sapienza”, Italy)
- Feola Roberto (Université de Nantes, France)
- Georgiev Vladimir (Università di Pisa, Italy)
- Iandoli Felice (Université de Nice, France)
- Laurent Camille (Université de Paris VI, France)
- Montalto Riccardo (Università di Milano, Italy)
- Ponce Gustavo (University of California Santa Barbara, USA)
- Procesi Michela (Università di Roma III, Italy)
- Robert Tristan (University of Edinburgh, UK)
- Rousset Frédéric (Université d’Orsay, France)
- Saffirio Chiara (University of Zurich, Switzerland)
- Sun Chenmin (Université de Cergy-Pontoise, France)
- Tarulli Mirko (Technical University of Sofia, Bulgaria)
- Tristani Isabelle (Ecole Normale Supérieure, France)

PURPOSE OF THE WORKSHOP

The workshop aims at presenting the state-of-the-art and current research directions in evolution equations with special attention to Dispersive and Hamiltonian Partial Differential Equations.

The models of interest arise from mathematical-physics: Nonlinear Schroedinger Equation, Korteweg-de Vrie Equation, Nonlinear Wave Equation, Nonlinear Klein Gordon Equation, Water Waves, to quote a few of them. In the last four decades, the field has attracted the attention of the mathematical community and fundamental progresses have been done from several viewpoints: local/global Cauchy theory, long-time existence, asymptotic behaviour, linear/nonlinear scattering, stability/instability of solutions, construction of invariant/quasi-invariant measures, probabilistic approach for random initial data, etc. The methods used to attack the problems are at the interface between Functional Analysis, Harmonic Analysis, Number Theory, Microlocal Analysis, Probability, Spectral Theory. Most of the techniques will be discussed during the meeting, and moreover a lot of attention will devoted to present open problems and conjectures.

APPLICATIONS

Persons wishing to attend the workshop should send an email to: nicola.visciglia@unipi.it

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 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 Sicanians altogether 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 cost below Erice. Homer (~1000 B.C.), Theocritus (~300 B.C.), Plybius (~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 foundat 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 at http://www.ccsem.infn.it