Institut für Analysis, Johannes Kepler Universität Linz
Altenberger Str. 69, 4040 Linz, Austria, www.jku.at/analysis/

The 2nd International Conference on Wave Interaction (WIN)

WIN – 2014

In the wave interaction theory nonlinear problems are treated in broad categories, on the basis of mathematical rather than physical similarity. This is possible due to the fact that many ideas and phenomena recur in such apparently diverse fields as rigid-body and fluid mechanics, plasmas physics, optics, biology, economics, etc.

The theory of wave interaction aims at describing the statistical and dynamical properties of a weakly nonlinear wave system. Statistical approach is used for describing energy transport over scales in the wave systems with distributed initial state. Their energy spectra are described by solutions of wave kinetic equation introduced by K.Hasselmann in 1962 and solved by V.E.Zakharov in 1968 who thus laid the foundations of the *kinetic wave turbulence theory*. Dynamical equations of motion are used to characterize phenomena occurring due to interaction of a finite number of harmonics, i.e. in the systems with narrow frequency band excitation. They are described in terms of resonance clustering, approach introduced by E.Kartashova in 1990 and is refereed to as *discrete wave turbulence theory*.

Nowadays a great progress has been achieved in the theoretical understanding of these two types of weakly nonlinear wave systems. However, there is still a lot of open problems demanding detailed studies. The principal idea of the WIN-conferences is to discuss and put forward a list of regularly observable wave interaction phenomena which are not fully explained by the existing theories thus opening new avenues for further investigations.

Invited speakers:

- Amiranashvili, S. (Weierstrass Institute, Germany)
- Cao, L.S. (Hamburg University, Germany)
- Chabchoub, A. (Swinburne University, Australia)
- Craig, W. (Fields Institute, Toronto, Canada)
- Degasperis, A. (Sapienza, Univ. of Rome, Italy)
- Dutykh, D. (CNRS, Savoie, France)
- Falcon, E. (CNRS, Paris, France)
- Fedele, F. (Georgia Institute of Technology, USA)
- Grimshaw, R. (Loughborough University, UK)
- Hani, Zaher (Courant Institute, NY, USA)
- Jamin, Timothée (CNRS, Paris, France)
- Kuznetsov, Evgenii (Landau ITP, Moscow, Russia)
- Liao, Shijun (Shanghai University, China)
- Mei, Chiang C. (MIT, USA)
- Obuse, Kiori (Kyoto University, Japan)
- Onorato, Miguel (University of Turin, Italy)
- Pelinovsky, Efim (JKU, Linz)
- Proment, Davide (University of East Anglia, UK)
- Randoux, Stephane (Lille University, France)
- Shemer, Lev (Tel-Aviv University, Israel)
- Shrira, Victor (Keele University, UK)
- Slunyaev, Alexey (IAP, Nizhny Novgorod, Russia)
- Suret, Pierre (Lille University, France)
- Talipova, Tatiana (IAP, Nizhny Novgorod, Russia)
- Tobisch, Elena (JKU, Linz)
- Waseda, Takuji (Tokyo University, Japan)

Scientific committee:

- Denys Dutykh, *Chargé de Recherche, CNRS, France*
- Chiang C. Mei, *Massachusetts Institute of Technology, Cambridge, USA*
- Miguel Onorato *University of Turin, Italy*
- Efim Pelinovsky *Institute of Applied Physics, Nizhny Novgorod, Russia*
- Elena Tobisch *Johannes Kepler University, Linz, Austria*

Organization:

- Renata Fleischner (renata.fleischner@jku.at)

Supported by:

EUROPEAN GEOSCIENCES UNION est. 2002 · FWF · LAND OBERÖSTERREICH · Linz verändert · JOHANNES KEPLER UNIVERSITÄT LINZ | JKU

Painting: Aivazovsky I.K. "*Among the Waves*" (1898)