KAWA Lecture notes

This volume collects lecture notes of some of the mini-courses delivered during the first four editions of KAWA, Komplex Analysis Winterschool/Workshop and Applications.

Why KAWA?

Several Complex Variables in the 21st century. Complex analysis in several variables (usually abbreviated as SCV) went through a golden age during the second half of the 20th century. These last few years, what used to be the core of SCV saw most activity gradually desert it, to move to the interface with other subfields. Complex analysis methods thus proved decisive in recent developments for (direct and) inverse problems in the spectral theory of self-adjoint differential operators, in probability theory (Schramm-Loewner evolution equation), in signal processing (Gabor analysis), in random matrix theory, in conformal field theory, in the statistical analysis of critical two-dimensional networks.

Moving in a different direction, the ergodic theory of rational maps is a very rich and vigorously expanding field. It is using many tools from, and motivates many new questions in complex analysis and complex geometry. One may mention, too, the recent and fruitful interaction between pluripotential theory and differential and Kählerian geometry, as well as the – ever stronger – interaction between complex analysis and analytic and algebraic geometry.

In order to pass on the knowledge accumulated along the last few decades by complex analysis, as well as to acquaint young and confirmed investigators with the methods of those domains where new interactions take place, researchers from Toulouse and Barcelona with a well-established track record of cooperation (within the Journées Complexes du Sud) have started a yearly thematic event:

KAWA, Komplex Analysis Winterschool/Workshop. A yearly meeting made up of a week of mini-courses followed by a workshop (short con-
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ference) with a stable location. The mini-courses being held in Toulouse, Marseille or Barcelona, the workshop in the same place or in a neighboring town. A short list of the main topics covered is:

- One and several variable complex dynamics
- Analytic, differential and almost complex geometry
- New developments in function and operator theory
- Pluripotential theory and applications

This project is meant to last. Once in a while, a larger conference, of European scope, will be planned (the first of those will take place in 2014 at CIRM, in Marseille).

Organizing committee. The organizers of these first editions were

- Vincent GUEDJ, Université Paul Sabatier (FRANCE),
- Jordi MARZO\(^1\), Universitat de Barcelona (ESPAGNE),
- Joaquim ORTEGA-CERDÀ, Universitat de Barcelona (ESPAGNE),
- Pascal THOMAS, Université Paul Sabatier (FRANCE),

Scientific committee. The scientific committee of KAWA consisted of:

- Bo BERNDTSSON, University of Gothenburg (SWEDEN);
- Jean-Pierre DEMAILLY, Université J. Fourier (FRANCE);
- Julien DUVAL, Université Paris 11 (FRANCE);
- Franc FORSTNERIČ, Ljubljana University (SLOVENIA);
- Laszlo LEMPERT, Purdue University (USA).

Courses

This volume consists of sets of lecture notes of those courses given at KAWA which were not already the object of a published article or survey. Here follows a list of all the courses delivered (five hours each):

KAWA 1. [Toulouse & Albi, 25-29.01.2010]


\(^{(1)}\) Starting with KAWA 3.

3. Alexandre SUKHOV (Université de Lille, France): Complex methods in symplectic topology.


KAWA 2. [CIRM, 31.01-05.02.2011]


KAWA 3. [Barcelona, 30.01-04.02.2012]


KAWA 4. [Toulouse & Albi, 21-27.01.2013]


3. Franc Forstnerič (Ljubljana University, Slovenia)
Oka manifolds.

Acknowledgements

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