Report on the school *Quantum integrable systems, conformal field theories and stochastic processes*

Dates 12–23 septembre 2016

Location Institut d'Études Scientifiques de Cargèse (Corse, France)

Organisers Jérémie Bouttier (CEA Saclay), Ivan Corwin (Columbia), Rémi Rhodes (Paris-Est), Vincent Vargas (ENS)

Scientific committee Sylvie Corteel (Paris 7), Rinat Kedem (Urbana-Champaign), Martin Hairer (Warwick), Kirone Mallick (CEA Saclay), Paul Zinn-Justin (Paris 6)

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Web site `https://indico.in2p3.fr/e/cargese2016`

Number of participants 75

1   Goals of the school

There has been many recent important developments at the interface between theoretical physics and probability theory, more precisely in the areas of quantum integrable systems and of conformal theory. The purpose of this two-week school was to bring together experts in these areas and enable a lively exchange of ideas and methods through mini-courses and research talks. In so doing, it was also our goal to educate a new generation of researchers (participants) in these areas and their relation. The lecturers we invited came from both mathematics and theoretical physics, and we expected that this would lead to a lively and productive exchange of ideas and methods.

2   Scientific program

The school last for two weeks and involved a total of 6 mini-courses (4*50 mn each), as well as 18 research lectures (50 mn) from senior participants. Junior participants were invited to submit titles and abstracts for either posters or short talks. All submissions were accepted: 12 junior participants gave short (20 mn) talks, and a similar number presented posters. The schedule afforded a lengthy lunch break to facilitate discussions and collaborations.

List of mini-courses

- Alexei Borodin: *Integrable probability*

- Alice Guionnet: *Topological expansions in random matrix theory*

- Antti Kupiainen: *Constructive conformal field theory: the Liouville model*

- Sylvain Ribault: *Conformal bootstrap approach to Liouville theory*

- Andrea Sportiello: *Tiling models and their arctic curves*

- Steve Zelditch: *From zeros of random analytic functions to random conformal metrics*

Research lectures Gaëtan Borot, Luigi Cantini, Dmitry Chelkak, Sylvie Corteel, François David, Benjamin Doyon, Jérôme Dubail, Steven Flores, Christophe Garban, Vadim Gorin, Nikolai Kitanine, Karol Kozlowski, Pierre Le Doussal, Pascal Maillard, Kirone Mallick, Raoul Santachiara, Lauren Williams and Hao Wu.

3   Other information

We had a total of 75 participants, including 8 women (4 lecturers, 4 students). About 15 participants from UPSay.

The cost charged by IESC was roughly 42000 € (accommodation, lunch and coffee breaks for all participants, airport shuttles, technical costs). In addition, we reimbursed the travel expenses for several European speakers and participants, for roughly 5000 € (US participants were reimbursed by the NSF grant, amount unknown).

Besides the funding from LMH, we received financial support from: ANR Cartaplus, Clay Mathematics Institute, DMA, INSMI, IPhT, LabEx Bézout, LAMA, GDRI Aléa Network, NSF and Université Paris-Est. The remaining receipts came from registration fees paid by some participants (via the Azur Colloques platform).

We received administrative support from the IESC staff (local organization) and our respective labs (notably Zaïna Elmir at DMA who handled the general CNRS account and Azur Colloques, and Laure Sauboy and Sylvie Zaffanella at IPhT who did the travel reimbursements).

The material (notes or slides) for most lectures is available online on the school website.