

Fifth Young Set Theory Workshop 2012,
Luminy

Scientific Report

Julien Melleray, Lionel Nguyen Van Thé, Todor Tsankov, Matteo Viale

June 28, 2012

Summary

The Young Set Theory Workshop 2012 took place between April 30th and May 4th at the CIRM, in Luminy, close to Marseille, France. This was the fifth such workshop after the series originated in Bonn in January 2008. Since then, the Young Set Theory Workshop has been established as an important annual event in set theory with many participants from Europe and overseas. This year, there were 79 participants.

Similarly to the previous editions, the goal of this workshop was to bring together postgraduates and postdocs in set theory in order to learn from senior researchers in the field, hear about the latest research, and discuss research issues in small focused groups. This was achieved through the format which was successful in the past, and which combines tutorials, postdoc talks, and discussion sessions. The participants had the opportunity to meet and exchange ideas in their area of research in a friendly cooperative environment.

Four senior set theorists (Ilijas Farah, Alain Louveau, Itay Neeman and Stevo Todorcevic) each gave four hour tutorials on new results in different areas of set theory. Each tutorial began with an introduction to the topic and then moved quickly towards recent results.

Seven postdocs presented recent research in several different areas related to set theory, ranging from descriptive set theory and forcing to combinatorics and Banach space theory.

Description of the scientific content of and discussion at the event

Similar to the previous years, the format of the workshop consisted of tutorials, talks and discussions.

Tutorials

- Ilijas Farah, Some applications of set theory to operator algebras.
Starting from the basics of operator algebras, Ilijas Farah presented Elliott's classification theorem for AF algebras stating that the ordered K_0 group is a complete isomorphism invariant for these algebras.
- Alain Louveau, Introduction to Effective Descriptive Set Theory.
After a concise and original presentation of effective descriptive set theory, several applications were given, for instance a proof of Silver's dichotomy theorem for coanalytic equivalence relations. This was the opportunity to contrast and compare this effective approach with the work of Ben Miller, who recently obtained similar results using completely different tools.
- Itay Neeman, Forcing iterations with finite side conditions.
The goal of this tutorial was to present a proof of the proper forcing axioms that uses a finite support iteration with models as side conditions to ensure properness.
- Stevo Todorćević, Walks on ordinals and their characteristics.
The purpose of this tutorial was to introduce minimal walks, and to describe how different so called ρ -functions can be used to code various objects.

Postdoc Talks

- Christina Brech, Forcing nonuniversal Banach spaces.
- Sean Cox, Some topics related to bounding by canonical functions.

- Vera Fischer, Mad families, splitting families and large continuum.
- Daisuke Ikegami, Gale-Stewart games and Blackwell games
- Carlos Martinez-Ranero, Contributions towards a fine structure theory of Aronszajn orderings.
- David Milovich, Davies trees and their applications.
- Farmer Schlutzenberg, Comparison and Measures in Inner Models.

Afternoon research discussions

This year, unlike the previous years, the discussion session was not especially synchronized. As a result, we cannot make a precise account on how the discussions went, and which topic they covered. What is clear is that there were many of them, all over the conference center.

Assessment of results and impact of the event on the future direction of the field

Judging from the number of participants, the workshop was a success. As observed in the previous years, the number of participants has increased in comparison with the previous workshops: there were 41 participants in Bonn in January 2008, 63 in Bellaterra (close to Barcelona) in April 2009, 70 in Raach (near Vienna) in February 2010, 76 in Königswinter (close to Bonn) in March 2011, and 79 this year.

Participants came from a wide variety of countries, including very distant ones. This confirms the interest towards the workshop, which has now become a major event for young researchers in set theory worldwide. This year, we had people attending from Austria, Brazil, Canada, Czech Republic, Finland, France, Germany, Hungary, Italy, Israel, Japan, Mexico, Netherlands, Poland, Portugal, Serbia, Slovakia, Spain, Switzerland, Thailand, United Kingdom, and United States.

The feedback we received was extremely positive, both from the regular participants and from the invited speakers. Participants emphasized the importance of the workshop as a meeting place, where it is possible to discuss

precise research questions with other students, but also with well-known specialists. Senior set theorists were also very enthusiastic about being offered the possibility of exposing the young generation to new lines of research.

As in the previous years, what seemed to work particularly well is the conference structure:

- Tutorials giving a general overview on and a quick introduction into certain subfields of contemporary set theory, providing a strong motivation to study the topics and emphasizing open questions in the area.
- Talks by postdocs highlighting some interesting recent developments in a more focused way.
- Discussion sessions which allowed students and researchers to interact in an informal way.

The workshop has a beneficial impact on the set theory community as a forum for current research in set theory especially geared towards young researchers. If the activity during the workshop reflects the number of future interactions, then it is reasonable to expect a good number of future collaborations.

Final programme of the meeting

The detailed programme is available on the workshop website: <http://math.univ-lyon1.fr/~melleray/y2012-program.html>

	Monday	Tuesday	Wednesday	Thursday	Friday
09h15-10h05	Farah 1	Farah 2	Louveau 3	Farah 3	Schlutzenberg
10h15-11h05	Todorcevic 1	Todorcevic 2	Todorcevic 3	Todorcevic 4	Farah 4
11h05-11h25	Pause	Pause	Pause	Pause	Pause
11h25-12h15	Cox	Brech	Neeman 2	Martinez	Milovich
12h30-14h00	Lunch	Lunch	Lunch	Lunch	Lunch
14h00-16h00	Discussions	Discussions		Discussions	Discussions
16h00-16h50	Louveau 1	Neeman 1		Louveau 4	
17h00-17h50	Fischer	Louveau 2		Neeman 3	
18h10-19h00		Ikegami		Neeman 4	
19h30	Dinner	Dinner	Dinner	Dinner	Dinner

List of participants

Domnik Adolf (Muenster), Giorgio Audrito (Torino), Antonio Aviles (Murcia), Mayra Montalvo Ballesteros (Leeds), Dana Bartosova (Toronto), Omer Ben-Neria (Tel Aviv), Christina Brech (Sao Paulo), Andrew Brooke-Taylor (Kobe), Gemma Carotenuto (Salerno), Raphael Carroy (Paris), Alonso Lenin Celis Martinez (Mexico), David Chodounsky (Prague), Sean Cox (Muenster), Scott Cramer (Berkeley), Vincenzo Dimonte (Vienna), Michal Doucha (Prague), Jacques Duparc (Lausanne), Ilijas Farah (Toronto), Barnabas Farkas (Budapest), Anne Fernengel (Bonn), Vera Fischer (Vienna), Laura Fontanella (Paris), Kevin Fournier (Lausanne and Paris), Luz Maria Garcia Avila (Barcelona), Vassilios Gregoriades (Darmstadt), Francisco Guevara (Caracas), Peter Holy (Bristol), Daisuke Ikegami (Berkeley), Adriane Kaichouh (Lyon), Yurii Khomskii (Vienna), Stuart King (Bristol), Marios Koulakis (Muenster), Borisa Kuzeljevic (Novi Sad), Francois Le Maitre (Lyon), Chris Le Sueur (Bristol), Alain Louveau (Paris), Martino Lupini (Toronto), Vesna Manojlovic (Belgrade), Carlos Martinez-Ranero (Morelia), David Matthai (Cambridge), Paul McKenney (Pittsburgh), Diego Mejia (Kobe), Julien Melleray (Lyon), David Milovich (Laredo), Itay Neeman (Los Angeles), Lionel Nguyen Van The (Marseille), Supakun Panasawatwong (Bangkok), Micheal Pawliuk (Toronto), Yann Pequignot (Lausanne and Paris), Luis Pereira (Lisbon), Norman Perlmutter (New York), Claribet Pina Rangel (Paris), Edoardo Ravello (Torino), Cristobal Rodriguez (Paris), Marcin Sabok (Warsaw), Philipp Schlicht (Bonn), Farmer Schlutzenberg (Denton), Jeff Serbus (Freiburg), Wojciech Stadnicki

(Wroclaw), Silvia Steila (Torino), Jaroslav Supina (Kosice), Carsten Szardenings (Munster), Stevo Todorcevic (Paris and Toronto), Timothy Trujillo (Denver), Todor Tsankov (Paris), Kostantinos Tsaprounis (Barcelona), Lauri Tuomi (Paris), Spencer Unger (Pittsburgh), Giorgio Venturi (Paris), Jonathan Verner (Prague), Matteo Viale (Torino), Zoltan Vidnyanszky (Budapest), Alessandro Vignati (Torino), David Virgili (Barcelona), Dimitris Vlitas (Paris), Thilo Weinert (Bonn), Philipp Wesolek (Chicago), Wolfgang Wohofsky (Vienna), Rafael Zamora (Paris).