Conference Applied Mathematics and Random Structures

Birzeit, Palestine, August 27-30, 2018

Scientific and financial report
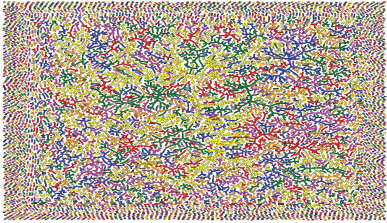
Web site: http://lipn.univ-paris13.fr/~nicodeme/birzeit18RAND/

BIRZEIT UNIVERSITY

RÉPUBLIQUE FRANÇAISE
CONSULAT GÉNÉRAL DE FRANCE À JÉRUSALEM

INSTITUT FRANÇAIS JÉRUSALEM

Birzeit 2018 Conference

"Applied Mathematics and Random Structures"

Faculty of Science, Room S240

http://lipn.univ-paris.13fr/~nicodeme/birzeit18RAND/

A critical graph of 40000 nodes;
the giant component is a huge tree [credit N.Broutin]

Organizing Committee
Brigitte Chauvin: Paris Saclay, France
Pierre Nicodème: Paris 13 University, France
Frédérique Bassino: Paris 13 University, France
Abdelrahim Mousa: Birzeit University, Palestine
Hani Kabajah: Birzeit University, Palestine

Sponsors

ICTP International Centre for Theoretical Physics

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LMV

OPEN DREAMKIT

The conference gathered 41 attendees around various fields of mathematics, such as statistics, game theory, analytic combinatorics, probability, differential or difference equations.

In particular, we had as attendees,

- 15 Professors (9 Palestinians, 6 Frenchs);
  - 3 from Al-Quds (Jerusalem-East),
  - 4 from Birzeit,
  - 1 from PPU-Hebron,
  - 1 from Tulkarem,
  - 1 from Paris13,
  - 2 from Versailles,
  - 1 from Nanterre,
  - 1 from Amiens,
  - 1 from École polytechnique.

- 2 researchers from Paris13 and 1 from Nokia-Bell Labs

- 25 students
  - 19 from Birzeit,
  - 3 from Al Quds,
  - 2 from PPU-Hebron,
  - 1 from Malaya

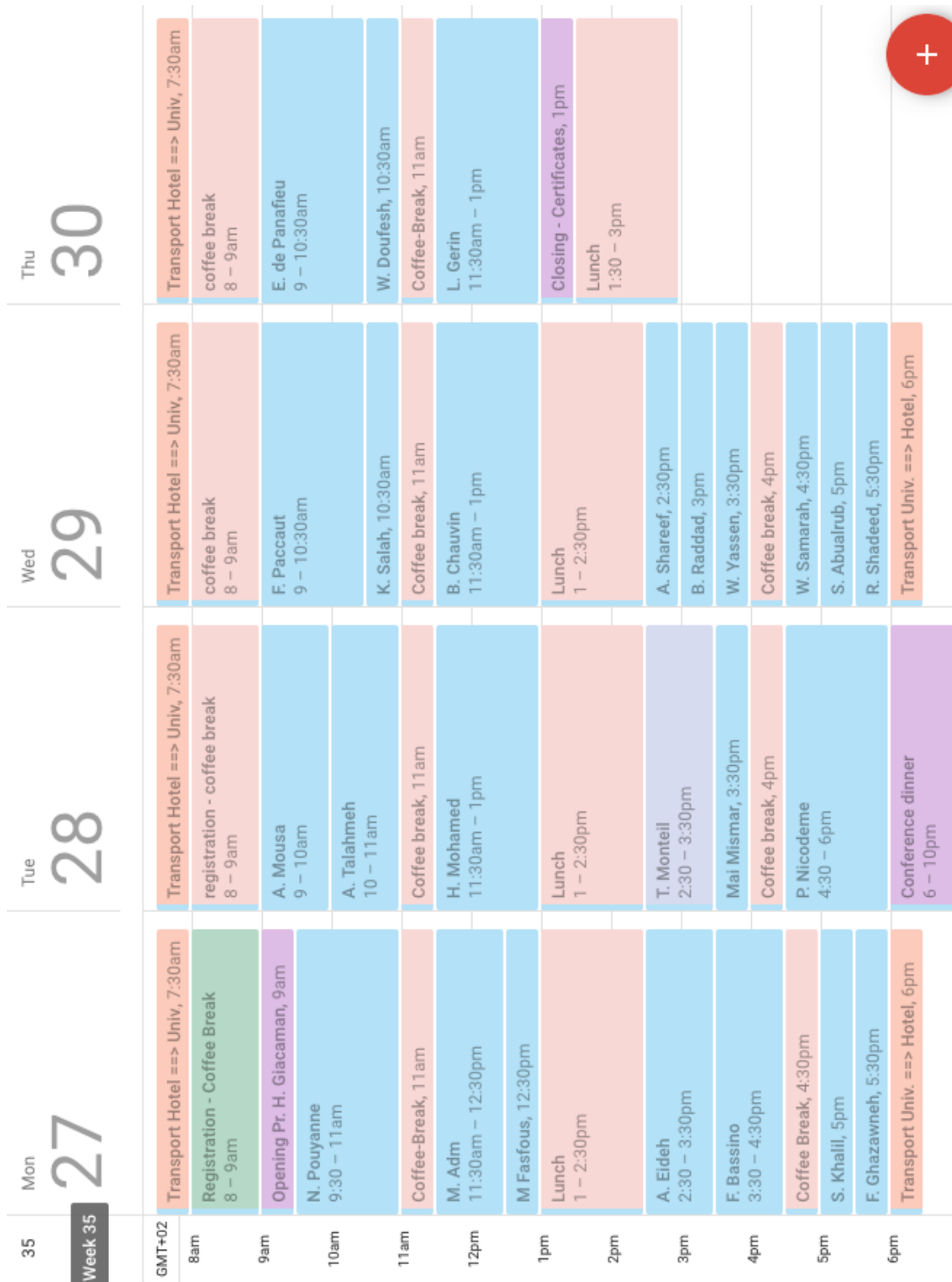There was a large majority of female students in the audience, 19 out of 25 students.

Figure 1: End schedule of the conference

1 Scientific report

We had

- 7 talks of 90 minutes,

  - Brigitte Chauvin - *Binary Search Trees*
  - Lucas Gerin - *Uniform random permutations*
  - Hanene Mohamed - *Mean field analysis for inhomogeneous bike sharing systems*
  - Pierre Nicodème - *Height of discrete bridges and excursions*
  - Frédéric Paccaut - *An introduction to dynamical systems: basic definitions and examples*
  - Elie de Panafieu - *Analytic combinatorics of graphs*
  - Nicolas Pouyanne - *Enumeration of planar graphs*

- 5 talks of 60 minutes

  - Frédérique Bassino - *Random generation of graphs and trees*
  - Abdulhakeem Eideh - *Analysis of survey data under informative sampling*
  - Mohammad Adm - *On the zero forcing game and maximum nullity of matrices whose graph is acyclic or unicyclic with q negative eigenvalues*
  - Abdelrahim Mousa - *Geometric approaches and bifurcations in the dichotomous decision model*
  - Thierry Monteil - *Introduction to the computer algebra system SAGE*

- 8 student talks of 30 minutes

  - Sima Abualrub - *Determinants of Student Success at Birzeit University*
  - Farida Ghazawneh - *Dynamics of piecewise isometries*
  - Sondos Khalil - *Numerical results with economic implications of a continuous time model*
  - Mai Mismar - *Finding The Optimal Solution of The Assignment Problems Using probabilities and without Any Iteration*
  - Khalid Salah - *An approximation of a longitudinal stochastic model*
  - Wisam Samarah - *A Mathematical Solutions to an Unstable Economic Environment: A Case Study of the Palestinian Economy*
  - Hind Sweis - *Solving Local Fractional Fredholm Integral Equation of the Second Kind with Separable Kernel*
  - Walaa Yassen - *Using Symmetries To Solve Some Difference Equations*

Most of the talks were well prepared and of excellent quality.

At the beginning, the students seemed to be a bit shy and stay in the back of the conference room, but later they went to the front seats.

Most students were proficient in english, although had some difficulties. It should be noticed that, at Birzeit, the math courses are taught in english.

Abdelrahim Mousa, Brigitte Chauvin, Nicolas Pouyanne and Pierre Nicodème were briefly received by the vice-president of the university. We had then an explanation of the overwhelming number of female students in mathematics; the male students prefer to go to courses linked to business, in particular since the wages of teachers are very low. The department of science had to downgrade the level required for admission to get enough students. There remain however some excellent students who wish to do a PhD abroad, in the US or Europe, since there is presently no doctoral school of mathematics in Palestine.

It would be favorable that the net of Palestinian mathematicians would be reinforced. Abdelrahim Mousa did his best to communicate the information regarding the conference, but there is unfortunately in the Arab countries a heavy hierarchical structure which hinders an efficient scientific communication.

Material conditions of many Palestinian students.
It is noteworthy that many Palestinian students work also as teachers during their studies. Therefore the daily audience to the conference was less than the number of registered persons.

2 Outcome of the conference

We all agree with the remarks sent by Abdelrahim Mousa to the President of the university. Here they are.

"I believe this conference was very successful. I state below the important outcomes of our Birzeit 2018 Conference:"

- *"There were many mathematical and statistical talks (one hour and half talk/one hour talk/half an hour talk) presented by the French Professors, Palestinian Professors and Master Students with rich scientific discussions based on the topics that were presented, so mathematical and statistical research were motivated and encouraged."*

- *"Bachelor and Master Students benefited from this conference as they got to see new topics in Applied Mathematics and Statistics when they applied to real life to solve problems in industrial economics and science."*

- *"Such topics include Ordinary and Partial Differential Equations; Game Theory; Stochastic Applications to Mathematical Finance and Life Insurance; Non-linear Recurrences; Randomness; Probability Theory; Statistics with a special focus on random graphs, trees, and random walks; Contributions related to algorithms on graphs, random graphs, trees, statistical criteria, software and hardware programming with architecture were applied; Methods used go from combinatorics and singularity analysis to large scale computer algebra; Interplay between discrete mathematics and probability theory."*

- *"A tutorial[1]. for the freeware computer algebra system SAGE was scheduled during the conference."*

- *"International research centers (like CIMPA) were announced in the closing sections to make research connections."*

- *"The relationships between the French and Palestinian Universities (and collaborators) have been strengthened with new connections."*

- *"High possibility for some of our excellent master students in mathematics to joint PhD programs in France."*

3 Material aspects

The conference has been held in excellent material conditions:

- large conference room with air conditioning,
- double up and down board; large screen for digital talks

All the participants are very grateful to Abdelrahim Mousa who, besides being an excellent mathematician, organized wonderfully the conference.

They are also extremely **grateful to all the sponsors** of the conference, the French Consulate of Jerusalem and Campus France, Birzeit university, Paris13 university, Saclay and Versailles universities, Paris-Nanterre university, ODK European project, Nokia Bell labs, IMU-Berlin and Fundacio Mathematica of Netherlands.

4 Social events

After the last session and the last lunch, Abdelrahim led our bus to a road alongside to a Palestinian refugee camp of 1948; this camp, like all Palestinian refugee camp is poor and get little supply of water. A few hundred meters away, there is a rich Jewish settlement, true testimony of the violence of the occupation of West Jordan and Gaza by the Israelis.

We paid also a visit to the Arafat museum in Ramallah which exhibits in remarkable way the history of the struggle of the Palestinian people for its liberty.

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[1]The machine-demo by Thierry Monteil of the use of the freeware SAGE has been very appreciated by the academics and by the students; Thierry stayed in Palestine after the conference to do other demos of SAGE in Nablus and Hebron.

6 A few photos

7 Some more photos

Left to Right: A. Mousa, M. Aloqali, E. Marne and O. Dufour of the French Consulate of Jerusalem, P. Nicodème