



Institut de Mathématiques de Jussieu

U.M.R. 7586 du C. N. R. S.

Université Pierre et Marie Curie (Paris 6)

Faculté de Mathématiques Pierre et Marie Curie (UFR 929)



CENTRE NATIONAL
DE LA RECHERCHE
SCIENTIFIQUE

Michel Waldschmidt

Institut de Mathématiques

«Théorie des Nombres», Case 247

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F-75252 PARIS

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Algebraic curves over finite fields

A joint CIMPA-ICTP research school

University of the Philippines Diliman, Manila.

July 22nd - August 2nd 2013

Report by Michel Waldschmidt

One main feature of this school was the large number of participants from outside the country: there were 37 participants outside Philippines, coming from India (8), Indonesia (7), Cambodia (4), Nepal (4), Iran (3), Italy (2), Thailand (2), France (1), Malaysia (1), Nigeria (1), Pakistan (1), Turkey (1), USA (1), Vietnam (1). On top of that, there were 20 participants from the Philippines, including 11 organizers. Among these 57 participants were 8 female. More women were selected but did not come.

Ten lecturers (including 1 woman), from Italy (4), USA (2), France (2), Spain (1), Netherlands (1) gave six courses of 50 minutes each. Some used the large blackboard with chalk, some used slides, some used both. Notes were distributed to the students, hard copies for some of the lectures, electronic versions for all of them.

The first week was more introductory, some of the students already knew most of the stuff, but a number of them learned a lot during that week. The second week included some material related with current research, but there was no gap in the level of the courses, all the necessary material has been introduced previously for allowing the participants to understand the more advanced courses. These notes may be polished by either the speakers themselves or by Philipino students – these Lecture Notes will make an original introduction to the topic. One of the courses, by Corrado Falcolini, was an introduction to SAGE with examples taken from the other courses. A challenge, proposed at the beginning of his course by Peter Stevenhagen, was to construct an elliptic curve and a prime number such that the number of points is a large integer previously chosen. The last two courses by Jorge Jimenez Urroz consisted in the solution, by the students, of exercises given by all the speakers previously.

The level of the participants covered a large range, some of them did not know finite fields nor elliptic curves, some others had already a good background on these topics. All of them learned something, depending on the participants

some courses were more popular than others, but altogether it seems that all courses were at the right level for the students: the speakers all made a great effort to give clear talks, and they succeeded very well.

The organization by Fidel Nemenzo and a team of students from his mathematical department did a great job. I came to Manila one week before the start of the school, and I witnessed the dedication of all of them to prepare this event very carefully. Most of the speakers and participants were welcomed personally when they reached Manila. The housing was exactly what is recommended for such a Research School: all participants and speakers (apart from one participant self supported who preferred to stay in another hotel, and apart also from some of the local participants) were accommodated in NISMED guest house, a comfortable hostel where everybody met during the evening, for the breakfast, and during the week-end, while the lunches were taken by speakers and participants together in the building of the lectures. However it was not possible to take dinner in this hostel, and the participants had to go a little bit further on the campus. Since they had also to pay for the breakfast, the participants who were supported by CIMPA or ICTP received some pocket money for that.

A number of off-school activities took place, including two touristic visits on Saturday (Taal Volcano, which may be the smallest Volcano in the world, it is located in an island, on top of it is a lake with a smaller island...) and on Sunday (a typical market for taking breakfast and Intramuros walled city Manila including lunch – the food in Philippines is excellent) and the football game, which brought participants closer together, complementing the intense atmosphere in the school.

As far as the budget is concerned, the combined support of CIMPA and ICTP constituted a large percentage of the financial support. A number of expected sponsors (IMU, ASEAN, NRCP, PCIERD, San Miguel) did not contribute. Also there was no support from Embassies. Many speakers got their own support for travel expenses; the contribution of the University of Roma 3 has been substantial. However some speakers who expected to get their own funds for their flight tickets needed at the end to be supported by CIMPA ICTP. Nevertheless most of the financial support from CIMPA ICTP was devoted to travel and local expenses of foreign participants. The large number of them was something not easy to handle, but the organizers, especially Fidel Nemenzo, did a great job. He negotiated good conditions so that the local cost was reduced as much as possible, and this shows that organizing such events in a place like Manila can be done without the need to a large financial local support.

The friendly atmosphere of the two weeks helped participants to establish contacts between them, this is how networks are being created. Several students took the opportunity of the contacts with foreign mathematicians for investigating the possibilities of pursuing their studies in another country.

The opening ceremony, on Monday, July 22, was moderated by Fidel Nemenzo, head of the local host committee and member of the scientific committee

of the Research School. Jose Maria Balmaceda, Dean of the College of Science, UP Diliman, Marian Roque, the Director of the Institute of Mathematics, (who is also member of the Government Board of the CIMPA), representatives of the Embassies of Italy (Alfonso Tagliaferri, the First Secretary), of France (Hélène Delille, Attaché for Scientific Cooperation and Development) and of Spain (Fernando Zapico, Technical Adviser on Education) said a few words. I also conveyed the greetings from CIMPA and ICTP. A message from Felix Muga (Chair, Mathematical Science Division, NRCP National Research Council of the Philippines) was read. The same evening, a dinner was offered in his residence by the President of the University of Philippines, Alfredo E. Pascual; there were representatives of Embassies, including Massimo Roscigno, Ambassador of Italy in Philippines, and Camille Dolor, Attaché for Higher Education and Academic Exchange, Embassy of France.

Among the participants were four students from Cambodia, who are completing their Master studies in the University of the Philippines (2012-2014). This kind of South–South cooperation seems to be a model to develop further; one wishes that more financial support be given to such programs.

At the opening ceremony, I met a German mathematician, H. Kuhn, who taught in UP during 5 years some 30 years ago. At that time there was hardly any mathematician in Philippines, mathematical research did not exist. He was the first of a series of 3 mathematicians from Germany who spent 5 year each in UP. With also the support of mathematicians from other countries (Japan, Australia,...) who visited Manila for shorter periods, these mathematicians started the process which led to the present strong community of mathematicians in Philippines. When I was sharing with him a course in the Master Program of the Royal University of Phnom Penh in 2012, Fidel Nemenzo told me that he considered Philipino mathematicians had a debt; now it is their turn to help promoting mathematics in countries like Cambodia. This Research School is an important step in this direction.

I am deeply grateful to Fidel Nemenzo who was the leading force of this CIMPA ICTP School, he started the project and conducted it from the beginning to the end. He was helped by his colleagues and students who did a great job. I am also thankful to him and to the University for having being invited Professor for 3 weeks including the 2 weeks of the School. The stay of all speakers and participant was a rewarding experience thanks to the contribution of the Philipino organizers. The scientific committee also did a great job by selecting the speakers and planning the scientific program, the Italian team (Francesco Pappalardi, Corrado Falcolini, Valerio Talamanca) can be congratulated for the success of this event.

Michel Waldschmidt.

Links:

- Page of the CIMPA website:
<http://www.cimpa-icpam.org/spip.php?article481>
- Page on the website of the University of Roma 3:
<http://ricerca.mat.uniroma3.it/users/valerio/manila2013.html>
- Local website UPD (with the [Lecture Notes and Slides](#))
http://www.math.upd.edu.ph/cimpa_research_school2013/