



UMR 7586
UPMC – 4, place Jussieu
BC 247
75252 PARIS CEDEX 05 FRANCE



Michel Waldschmidt
Professeur émérite

Paris, December 22, 2015

Report on my visit to Pakistan November 18 - 28, 2015

At the initiative of Professor Alla Ditta Raza Choudary, former General Director of the **Abdus Salam School of Mathematical Sciences** (ASSMS), I have been invited by the **National Mathematical Society of Pakistan** (NMSP) and **Kangourou Sans Frontières Pakistan** (KSF). NMSP has launched a new scheme called *Eminent Professors Lectures Program EPLP*, and I have been fortunate to be the first mathematician to be invited under this program.

I left France early morning on November 18, 2015 and reached Lahore the following night. On the way back, I left Lahore in the night 27/28 and reached France on November 28.

Under this *Eminent Professors Lectures Program*, I delivered four lectures:

- **Abdus Salam School of Mathematical Sciences** (ASSMS), GC University Lahore, on Friday, November 20, 10:00 - 11:30: *Continued fractions: introduction and applications*.
- **Centre for Advanced Studies in Pure and Applied Mathematics** (CASAPAM), **Bahauddin Zakariya University** (BZU) Multan, Monday, November 23, 11:00 - 12:30: *An elementary introduction to cryptography*.
- **Department of Mathematical Sciences IBA** (Institute of Business Administration), Karachi, on Wednesday, November 25, 11:00-12:30: *An elementary introduction to error correcting codes*.
- **Forman Christian College** (FC College) University Lahore, on November 26, 12:30-14:00, *Some arithmetic problems raised by rabbits, cows and the Da Vinci Code*.

Besides, on Saturday, November 21, in the **National University of Computer and Emerging Sciences** (NUCES, FAST) in Lahore, I attended a defense of a PhD thesis by Abdul Hameed, a student of Toru Nakahara, with the title *On pure octic fields related to a problem of Hasse*.

I was invited by [Faqir Muhammad Bhatti](#) to give a talk at the [Centre for Advanced Studies in Mathematics](#) (CASM), [Lahore University of Management Sciences](#) (LUMS). On Friday, November 27, I spoke on *Some international mathematical societies and institutes: SMF, EMS, IMU, CIMPA, ICTP*. This visit gave me the opportunity to meet again Mrs Shamin (Akhtar) Arif, who was the first PhD Student of Bryan Birch (University of Manchester, 1967). I already met her during my second visit to LUMS in [February 2012](#) (my first visit to LUMS was in [February 2009](#)). I also could speak (in French) with Amer Rasheed, who graduated from INSA Rennes.

The slides of all these presentations are on my web page

<http://webusers.imj-prg.fr/~michel.waldschmidt/AgendaArchives.html>

• **Lahore:** [Abdus Salam School of Mathematical Sciences](#)

I stayed in Lahore (guest house of GCU) from November 19 to 22 and from November 25 to 28.

My host at ASSMS was the General Director, Professor Shahid Saeed Siddiqi. He replaced Professor Alla Ditta Raza Choudary a few months ago.

The first day of my stay in Pakistan, on November 19, with Shahid Saeed Siddiqi, we met the Vice Chancellor of GCU, Professor Hassan Amir Shah. We met him again on Saturday, November 21, for a dinner at Hospitality Inn, together with Imran Anwar and [Amer Iqbal](#). We also met him at the very end of my stay in Pakistan, on Friday 27, when we signed the document which was prepared the day before:

The Planning & Vision Statement for Sustainable Development of ASSMS-2015.

The meeting on Thursday, November 26 for preparing this document was attended by

- Shahid S. Siddiqi, Director General, ASSMS,
- Amer Iqbal, Visiting Professor, ASSMS,
- Imran Anwar, Associate Professor, ASSMS,
- Ioan Tomescu, Visiting Professor,
- Georgi Eremiev Karazdov, Visiting Professor

and myself.

The basic idea is that ASSMS is already an internationally well known center for mathematics, with a remarkable record for education at the PhD level, as shown by the **ERCE** label (Emerging Regional Centres of Excellence) of the European Mathematical Society. But so far it is not yet a research center, it has no permanent faculty member and no Pakistani faculty member. Recently two mathematicians from Pakistan, who received their PhD from ASSMS, joined the staff of ASSMS: Imran Anwar and Afshan Sadiq. Also Amer Iqbal is a Visiting Professor of ASSMS. A *Scientific Advisory Committee* is created. Its role is to evaluate proposals that the ASSMS receives from its faculty for funding. The SAC will advise the School on important policies regarding research, hiring, curriculum and graduate programs, it will recommend new initiatives to the school, evaluate research proposals for funding. The SAC will help ASSMS for building its faculty. It will evaluate the applications for postdoctoral fellowships.

A new scheme is also launched: *Research Projects in Mathematical Sciences* RPMS. This initiative should have a strong impact on the development of international relations of ASSMS.

On Friday, November 27, I participated to the ASSMS *Academic Excellence Award Ceremony*. In my talk, I gave some information on the meeting of the previous day, on The Planning & Vision Statement for Sustainable Development of ASSMS-2015, on the Scientific Advisory Committee and on the initiative Research Projects in Mathematical Sciences.

In Lahore I had also several discussions with Shahbaz Ali, the Librarian of ASSMS, concerning not only the library but also the publication of the Journal of Prime Research in Mathematics (JPRM).

With Shahid Saeed Siddiqi and Imran Anwar we discussed a possible *7th World Conference on 21st Century Mathematics 2017*, after the 6th World Conference *Mathematics in the 21st Century*, Lahore, March 2013 (Springer Proceedings in Mathematics & Statistics, Volume **98**, 2015). Such an international conference used to be held every second year, but the program was interrupted in 2015.

• **Multan:** *Centre for Advanced Studies in Pure and Applied Mathematics* (CASAPAM), *Bahauddin Zakariya University* (BZU)

I reached Multan on November 22 evening and left on November 24 afternoon. My host was Usman Ali, vice-president of **NMSP**, who prepared my

visit in Pakistan (not only Multan) very efficiently and took care of many aspects of my stay in Multan. Besides Usman Ali, I met a number of colleagues, including Nusrat Yasmin (Chairperson of CASPAM), Amjad Ali, Muhammad Ashraf, Imran Javaid, Fiza Zafar, Muhammad Asif, Ahtsham ul Haq Bokhari, Khalid Saifullah, Mudassar Nazar, Saima Akram, Muhammad Ibrahim and Imran Khalid, Shahzad Ahmad. I also had a meeting with the Dean of Sciences, Professor Dr. Tariq Ansari at a dinner on November 23.

CASPAM, a *Center of excellence*, is a very dynamic institute for many years, even more so with the hiring of young PhD mathematicians coming from ASSMS. The center has currently 11 PhD faculty members in different fields of mathematics. The Director of CASPAM, Dr Nusrat Yasmin, introduced the Center. This center is imparting education at BS, MSc, MPhil and PhD levels and offers specialization in Pure, Applied and Computational Mathematics and is striving to provide high quality education to all of its students through excellence in research and teaching. Currently, 134 MPhil and 45 PhD are enrolled at the center. It has produced 206 MPhil and 28 PhD up till now.

To arise the interest in mathematics, CASPAM arranges yearly Regional Students Olympiad of Mathematics in collaboration with NSMP and Elsevier support fund.

Several members of CASPAM are contributing to the activities of the **National Mathematical Society of Pakistan** (NMSP). This society runs several programs: the Abdus Salam Shield of Honor, traveling grants to members of the society for presenting research papers in a international conference. NMSP works alongside with **Kangourou Sans Frontières Pakistan** (KSF). NSMP represents Pakistan as Adhering organization in **IMU**. It is not optimal that there are so many different mathematical societies in Pakistan, with no links between them. A single one would be much more influential!

I visited the campus of BZU (Library, Computer Centre, Research Rooms, HEC digital library, etc), the Central Library and premises of the university. I also had meetings with MPhil and PhD students.

• **Karachi:** **Department of Mathematical Sciences** IBA (Institute of Business Administration)

Just after my arrival at Lahore, Danish Ali invited me to visit the **Department of Mathematical Sciences**, Institute of Business Administration (IBA). I reached Karachi on November 24 afternoon and left on 25 evening. Danish

Ali was my host with another former PhD from AMMSM, [Junaid Alam Khan](#). The chairperson for my talk was [Muhammad Shahid Qureshi](#), Chair of the mathematics department of IBA.

The Department of Mathematical Sciences of IBA is a young and dynamic mathematical institute, not only in applied mathematics as I anticipated from the name of the Institute. The director of IBA, [Ishrat Husain](#) is an economist, who had high level positions, in particular in the World Bank. He has a clear vision of the importance of mathematics. He told me that he requests his students who graduate in economics to have also a diploma in mathematics.

I met and interacted with many mathematics students of different levels at IBA during my short visit. They asked a number of questions on many different topics.

This department of mathematics deserves to be supported. Foreign mathematicians who visit Pakistan (for instance who go for teaching in ASSMS) should be encouraged to spend some time in IBA Karachi.

• Conclusion

My short tour of Pakistan reveals that in many departments of mathematics of universities around the country, one meets PhD holders who are former students of ASSMS. A number of them pursue their research activities, despite the too heavy load of teaching duties they have. However, a very small number of former PhD students from ASSMS had the opportunity to visit institutes abroad. It would be very useful for them to see how research is conducted in universities of other countries, and to work with foreign mathematicians. An international program of Postdoc training would improve the level of the PhD holders before they start teaching in different universities. Such a program could be made on the basis of exchange agreements. A natural target for signing MOU is provided by the list of institutes with the ERCE label, and the institutes which participate to the NIM scheme (*Network of International Mathematics Centers*).

A young student from Indonesia is trained at ASSMS. At the beginning of his stay, he was supported by EMS; he is now supported by ASSMS. It is hoped that such training of foreign students will be further developed. There will be a new call very soon for attributing ERCE labels in 2016, ASSMS could apply to get a new one (the first one was from 2011 to 2014).

Many foreign mathematicians come to ASSMS for teaching; some of them could also interact with other active centers in mathematics in Pakistan, like the two centers I visited in Multan and in Karachi. The website of ASSMS should be updated on a regular basis and spread the information concerning foreign faculty members coming to ASSMS for teaching, so that the mathematicians outside ASSMS will be aware of the program of international visits and can benefit from it. This will enable ASSMS to play the role of a main node of a national network.

I wish to conclude by thanking all colleagues who welcomed me so warmly at the different places I visited in Pakistan. And I am very much thankful to Raza who took the initiative of inviting me. He succeeded to make ASSMS an internationally reckoned center of mathematics, and I am glad that both of us are going to be in the advisory board for a further development and a renewal of this superb institute.



Michel Waldschmidt.

This report as well as reports on some of my previous visits to Pakistan are on my website:

<http://www.imj-prg.fr/~michel.waldschmidt/articles/pdf/RptPakistan09.pdf>
<http://www.imj-prg.fr/~michel.waldschmidt/articles/pdf/rptFSTP2009.pdf>
<http://www.imj-prg.fr/~michel.waldschmidt/articles/pdf/RptIndePakistanNepal2009-2010.pdf>
<http://www.imj-prg.fr/~michel.waldschmidt/articles/pdf/RptCIMPASchoolASSMS2012.pdf>
<http://www.imj-prg.fr/~michel.waldschmidt/articles/pdf/Rpt14IPMC2013.pdf>
<http://www.imj-prg.fr/~michel.waldschmidt/articles/pdf/RptPakistanNov2015.pdf>

Encl. :

- *The Planning & Vision Statement for Sustainable Development of ASSMS-2015* (4 pages)
- *Notification* (1 page).

4, Place Jussieu Bureau 15-25 417

Tél. : [33] (0)1 44 27 54 41

<http://www.imj-prg.fr/~michel.waldschmidt/>

Secr. : [33] (0)1 44 27 38 08

Fax : [33] (0)1 44 27 63 25

michel.waldschmidt@imj-prg.fr

Abdus Salam
School of Mathematical Sciences

GC University Lahore.



Date: 27 November, 2015.

NOTIFICATION

The undersigned is pleased to select Professor Michel Waldschmidt as the President of Scientific Advisory Committee (SAC) of Abdus Salam School of Mathematical Sciences, GC University, Lahore for the tenure of two years w.e.f. 01 December, 2015. His role as the President of the SAC will be to constitute the Committee in consultation with the Director General and the faculty of the School. The role of SAC will be to

- advise ASSMS on important policies regarding research, curriculum and graduate programme in consultation with the faculty of the School
- recommend new initiatives to the School
- evaluate research proposals for funding
- make recommendations for hiring of the faculty of the School

Dr. Shahid S. Siddiqi
Director General
Abdus Salam School of Mathematical Sciences,
GC University, Lahore

Copy to:

1. The Vice Chancellor / Chairman BOG ASSMS, GC University, Lahore.

The Planning & Vision Statement for Sustainable Development of ASSMS-2015

Abdus Salam School of Mathematical Sciences (ASSMS), G.C. University, Lahore aims to carry out cutting edge innovative research in mathematical sciences and train graduate students and researchers from all over Pakistan. The ASSMS is well known internationally as a center for mathematics and will strive to become a world class research center in mathematical sciences.

The ASSMS is committed to supporting research that is potentially transformative and communicating to the general public the importance of mathematics and sciences for the advancement of society.

The ASSMS will make every effort to:

- provide support for research collaboration between its faculty and faculty at other Pakistani universities
- play a role in fostering international collaboration between Pakistani universities and researchers abroad
- provide opportunities for scientists in Pakistan to interact with leading researchers
- become a focal institute of HEC for setting standard in mathematical sciences research projects funded under National Research Program for University (NRP).

Scientific Advisory Committee (SAC)

The Scientific Advisory Committee serves as an advisory committee to the Director General and permanent faculty of the School. It makes recommendations on scientific direction and programs in the ASSMS. It also evaluates research proposals that the ASSMS receives from its faculty for funding.

- Advises the School on important policies regarding research, hiring, curriculum and graduate program in consultation with the faculty of the School.
- Recommends new initiatives to the School



- Evaluates Research Proposals for funding
- ASSMS should hold two annual meetings of SAC
- The opening tenure of SAC should be of two years. Afterwards, the SAC should be revised after every year.

The president of the SAC will constitute the committee in consultation with the Director General and the permanent faculty of the School. Apart from the Director General of the School there should be one representative of the faculty of ASSMS in SAC. A faculty will not be a part of SAC in evaluating Research Proposals for funding if he/she is an applicant.

Faculty Hiring

The School will make every effort to hire outstanding candidates for tenured and tenure track positions. The School intends to select exceptional individuals to join its faculty who can further the vision of the school. To attract and retain such individuals the school should provide competitive salaries and research support in the form of start-up funds/travel support. Access to state of the art facilities and extensive opportunities for collaborative work should be provided by the school. The SAC will help ASSMS in building its faculty by recommending and convincing outstanding individuals.

The School will follow HEC hiring policy for permanent faculty along with the following:

- Two letters of recommendation from experts in the respective area of research of the candidate
- Research statement outlining the research projects the candidate intends to carry out at the school
- Teaching Statement
- A research talk if the candidate is available in Pakistan. If the candidate is not available for a research talk then either an online talk or an online meeting will be arranged.



Research Projects in Mathematical Sciences (RPMS)

RPMS is a new initiative of the School which aims to provide the permanent and visiting faculty of the School research grants.

1. A project submitted to RPMS should be of duration from 6 months to 1 year.
2. A project submitted to RPMS should be refereed by the Scientific Advisory Committee (SAC) in order to ensure the transparency and standardizing RPMS.
3. An amount of PKR 5 Million will be reserved against RPMS annually.
4. The Principal Investigator (PI) and Co-Principal Investigator (Co-PI) will be a permanent or a visiting faculty members of the School. Postdoctoral fellows of the School can also be Co-PI on a project.
5. A project funded under RPMS should involve graduate students of the School.
6. A project funded under RPMS should include travel funding for short term research visits.
7. RPMS should encourage local and international collaborative research proposals.

Postdoctoral Fellowship

The School will offer a number of Postdoctoral Fellowships each year. The exact number will depend on the funding available. This year the School has advertised four Postdoctoral fellowships. To attract exceptional individuals the School is already offering generous salary equivalent to assistant professor on tenure track:

- A permanent or visiting faculty of the School will act as the supervisor for the duration of the fellowship.
- Duration of the fellowship will be from 3 to 9 months initially but can be extended, if the funds are available, on the recommendation of the supervisor.
- A research plan will have to be submitted by the candidate after discussion with the prospective supervisor.
- The postdoctoral fellow may be asked to teach a course on the recommendation and supervised by his/her supervisor or should give a seminar series.



- The applications for postdoctoral fellowship will be evaluated by the Scientific Advisory Committee (SAC) of the School.

It is hoped that the above policies and initiatives will help in setting standards of research carried out in the ASSMS. It is expected that this document will get modified from time to time but always in line with the vision of the school.

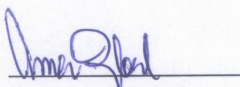
The above mentioned policies are discussed and finalized in the meeting of Planning & Vision for sustainable development of ASSMS held on November 26, 2015 in ASSMS.

 Nov. 27, 2015

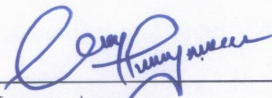
Dr. Ioan Tomescu
Visiting Professor, ASSMS



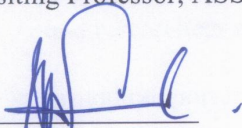
Dr. G. E. Karadzhov
Visiting Professor, ASSMS



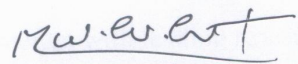
Dr. Amer Iqbal
Visiting Professor, ASSMS



Dr. Imran Anwar,
Associate Professor, ASSMS



Dr. Shahid S. Siddiqi
Director General, ASSMS



Dr. Michel Waldschmidt
President of SAC, ASSMS



Dr. Hassan Amir Shah
Chairman Board of Governors, ASSMS