Report on the

2nd *International Conference of Mathematics and its Applications*
Basrah 23-24 Oct 2013

The "2nd international conference of mathematics and its applications" took place in Basrah, Iraq the days of October 23 and 24, 2013. I participated in the conference as invited speaker and I presented the seminar "On the reduction properties of groups of rational numbers". My seminar took place on the second day at 10:00 and it lasted 40 minutes. I was invited to the conference by **Dr. Ahmed Zainy Al-Yasry** (University of Baghdad and Organizing committee member).

I arrived in Iraq with Emirates flight EK945 from Dubai on October 22 and left Iraq to Kuwait by car on October 25.

1- Organization of the conference: The conference was held in the Oil Educational Centre and the lectures were divided in 5 parallel sessions (Topology, Algebra, Mathematical and Functional Analysis, Differential equations and Numerical Analysis and Statistics and Operation research). I had the feeling that most of the Iraqis institutions and branches of research were represented. The opening ceremony was intense and interesting. During the first day the schedule was respected quite faithfully without major delays. I was driven to the conference venue by a car arranged by organizers and my transportation was comfortable and quick. I received a name tag that made it easier to introduce myself to other participants and I also received the rest of the registration package with schedule and abstract book. I cannot find any defect in the organization and I have the feeling that also local participants were welcomed and looked after properly. During the second day some changes to the schedule were necessary including the change of the conference hall. I am not aware of the reason for changing the schedule but I am sure that there have been valid reasons.

2- Nature and level of the research papers discussed in the conference: during the conference I attended the plenary talks and the Algebra session which is the closest to my own research interests. The session was chaired by **Saeed A. Taban**. All talks were given with power point presentations.

- ✓ Plenary Talks. I attended to three talks. The first by **Saleem H. Al-Kutubi** (Tikrit University and member of the National Advisory Board) titled *Mathematics between Culture and Reality,* the second by **Abdul-adheem M. Al-Soudinay** (University of Nizwa - Oman) titled *Some Algebraic structures on Manifold* and the third by **M. Jambu** (Université Nice – Sophie Antipolis) titled *Topological Complexity and applications to Robotics*.

- ✓ Fuzzy Algebra. A *fuzzy subset* of a set X is a map $A:X \rightarrow [0,1]$. Hence a subset can be thought as a fuzzy subset A such that $A(X) \subseteq \{0,1\}$. Fuzzy mathematics started in 1965 with the contribution of Lotfi A. Zadeh. Most of the algebraic structures have a fuzzy analogue (e.g. a fuzzy subgroup of a group

G is a fuzzy subset H such that for all $x,y \in G$, $H(x*y^{-1}) \geq \min(H(x),H(y^{-1})))$. Several seminars considered various aspects of fuzzy algebra. I am not an expert in this branch of mathematics and I barely heard of these notions before ICMA. I am quite impressed by the diffusion of this branch on mathematics in several institutions of Iraq. It is to be noted that fuzzy mathematics is not really present in most of European institutions. Iraqi Algebraists might benefit from further interaction with foreign algebraists and from being exposed to different topics.

✓ <u>Graph theory.</u> I heard some interesting seminar in graph theory. In particular there are research groups at the University of Kufa and at Thi-Qar University have interests related to Hosoya Polynomials and with Extension of Eulerian graphs.

✓ <u>Finite geometries.</u> A $\{k;n\}$-arc of a finite plane is defined to be a set of k points such that some n, but no $n+1$, are on a line. The enumeration of $\{k;n\}$-arcs is still a topic of research in the field of finite geometries. There were at least two seminars by former students (Emad Al-Zangana and Najm Al-Seraji) of James Hirschfeld at the University of Sussex. They reported on their doctorate thesis and there are both faculties at the University of Baghdad.

✓<u>Character theory.</u> There were at least two seminars held by graduate students on this topic. One of them (*Najlaa Sadeq Abdullah*) is planning to go to Scotland to start PhD studies.

The talks were short but effective. I also found appropriate the division in parallel talks. It was remarkable the fact that after every single talk there was an animated space for questions and discussions in Arabic. I am sorry of not having been able to understand.

3- Iraqi committee of mathematics: several members of the Iraqi committee of mathematics were attending the conference. Among these colleagues I interacted fruitfully with the following members of the organizing committee:

- **Raad S. Mahdi** (PhD University of Basrah & Université Nice)

- **Qusay S. Abdul Aziz** (PhD Manchester University)

- **Hana M. Ali** (PhD University of Basrah & Université Nice)

- **Habeeb M. Abood** (PhD Lomonosov Moskow State University)

- **Abdulsattar J. Ali** (PhD Shangai University)

It is remarkable that so many Iraqi colleagues have degrees from foreign Universities. This is the sign of an effective program of doctorate fellowships which has given excellent results. Competences in various branches of Mathematics are present in the committee of Mathematics and this estate of knowledge needs to be preserved and expanded.

Hence, it is really unfortunate that Iraqi PhDs do not have the possibility to carry out **post doctoral** activities abroad. In most of world universities, it is considered imperative for fresh doctorate graduates, before being considered for permanent positions, to spend at least one or two years in an institution different from the one awarding the PhD, carrying out research and strengthening mathematical background. It would be really good if Iraq doctorate graduates had this opportunity.

Furthermore, I believe that Iraqi researchers would achieve a great benefit from being able to spend a few weeks every year travelling abroad attending conferences and carrying out research projects with foreign colleagues. This essential goal might be obtained by establishing a granting system with international peer reviews. Those that deserve should be able to access funds to support their research. I find that the strongest danger for Iraqi mathematics today is isolation from the international community. Training researchers without giving them the tools to keep on publishing at international level, might not be enough. Mathematics research is like a plant that needs watering and also need contacts with others.

Every mathematician I met spoke English and I also had the chance to speak French with Professor **Ali H. Al Taai** (Ministry of Higher Education and Scientific Research Iraq and member of the International advisory board) and with **Raheam Ahmad Mansor Al-Saphory** (University of Tikrit and member of the National advisory board) .

4- Hospitality of the organizing committee: I have only good things to say about the organization of the conference. The main organizer, Professor Raad A. Madhi, came to welcome me to the Basrah airport. He drove me to the Manawi Basha hotel where I was housed together with the other international participants. At lunch time Professor Abdulsattar J. Ali came to welcome me and we had lunch with Professor Abdul Adeem. Later I met Professor Hana, Dr. Hatam Jassim and their family that were always with me and the other international guests making us feel always safe and looked after. On October 25th, I was driven to the Kuwait border with Jorge Jimenez Urroz by Professor Raad A. Madhi and Professor Habeeb M. Abood. At the border there was a person waiting for us and the Iraq border crossing was extremely easy and pleasant. Raad and Habeeb also arranged for the car that drove us to Kuwait city. I have to say that I rarely experienced in the past such a nice and warm hospitality.

5- Follow ups to the conference and future participation in Iraq activities: The conference left a very good impression on me. I had a precise idea of the mathematics level and environment in Iraq. If invited, I would certainly participate in future activities. My university is quite interested in academic cooperation with Iraq. I wish that the time spent in Basrah would have been longer so to have been able to spent some time discussing possible future joint projects.

I have been invited by Professor Saad Naji (College of Science for Women University of Baghdad) to visit his Department early next year. I have accepted his invitation and I am planning to be in Baghdad next February 16-19 2014.

6- Lectures given by foreign participants: There were three lectures given by foreign participants, including mine. Michel Jambu and Abdul Adeem both gave interesting lectures in Differential Topology. The conference was also attended by **Michel Waldschmidt** (Université Paris VI and member of the ICMA international advisory board) and **Jorge Jimenez Urroz** (Universitat Politècnica de Catalunya and CIMPA scientific responsible for South Asia). Unfortunately, due to the tight schedule and, what I guess to be, a problem in communication, it was not possible to host lectures by them. In a future occasion, it would be good to accommodate all the talks by foreign participants.

7- Technical issues: Arriving in Basrah by air is quite easy and convenient. I believe that entering Iraq from Kuwait would have been more complicated. The personal at the Iraqi embassy in Roma was extremely professional, efficient and polite. My visa was issued without any problem but its validity was only for one month from the day of issue. I understand the length of validity for the visa might be due to general consular laws. However this might cause some difficulties in the organization of visits to Iraq. Academic

visits need to be planned in advance and also air tickets can only be bought after the visa is issued. In case in the future some longer cooperation plan is implemented, it would be desirable that some different visa arrangements are made.

CONCLUSION

The organization of a big conference like ICMA is not an easy task in any part of the world. The Barsah team made an excellent job bringing together mathematicians from several parts of Iraq and providing them with a stimulating, joyful and safe environment where to exchange information about research projects. Events of this type are fundamental in any mathematical community that has the goal to improve and grow. I left Iraq extremely satisfied and impressed by the conference.

Yours sincerely

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