

**REPORT OF THE RESEARCH SCHOOL “QUASI-CYCLIC AND RELATED  
ALGEBRAIC CODES”  
ANKARA (TURKEY), AUGUST 27–SEPTEMBER 7, 2018**

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This Research School took place at Middle East Technical University (METU) (<http://www.metu.edu.tr/>) in Ankara (Turkey), from August 27th till September 8th, 2018. This University has a very big campus, conveniently located in a green area (a pine forest), very pleasant. Inside the campus you can find many facilities, as restaurants, cafeterias, banks or a supermarket.

I must say that I was only present there the first week of the School. It begun on August 27th, with the opening welcome of the local organizer, Ferruh Ozbudak, and the welcome from CIMPA by Jorge Mozo, Scientific Officer in charge of this School. As it is summer holidays, no authorities of the University were present at the event. I tried to contact the Spanish Embassy for the opening, but I didn't obtained any answer from them, despite my insistence.

The scheduled courses of this School were:

1. Joachim Rosenthal: Three challenges coming from Claude Shannon. An introduction to Convolutional Coding Theory. An overview on Code based Cryptography.
2. Peter Trifonov: Reed-Solomon, Reed-Muller and BCH codes, Polar subcodes, Sequential decoding of polar subcodes and related codes, Generalized concatenated codes and polar codes with big kernels.
3. Cen Güneri: On Linear Complementary Dual (LCD) and Linear Complementary Pair (LCP) of Codes.
4. Jens Zümmbragel: Introduction to Ring-Linear Coding Theory.

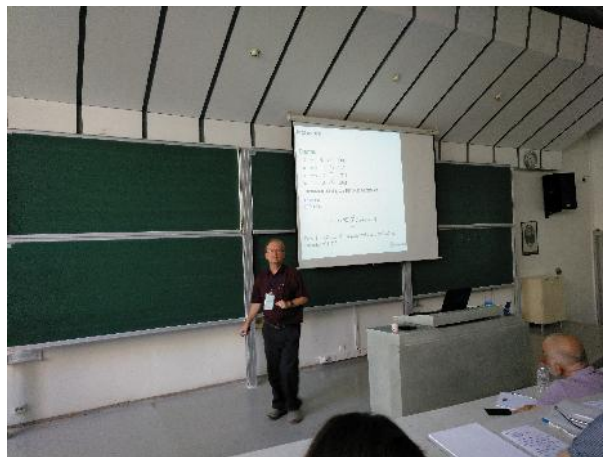


FIGURE 1. Lecture of Prof. J. Rosenthal

5. Heide Gluesing-Luerssen: Introduction to Skew-Cyclic Block Codes.
6. Buket Özkaya: Some constructions of binary LCD codes and linear programming bound.
7. Erdal Arkan: Polar coding: theory and applications
8. Frederic Ezerman: Quantum Codes from Cyclic-Type Classical Codes.
9. Serdar Boztas: Sequences, arrays, and distributions with applications.

A talk of Patrick Solé also took place on the first day. The level of the courses ranged from basic (the first talk of Prof. Rosenthal was a very good introduction to the subject, even for non-specialists) to rather advanced (some of the talks focused in recent research of the authors). The length of the courses was not standard, also ranging from 2 hours to 5 hours. No tutorial or problems sessions were scheduled, even if some of the speakers had proposed it. On Friday 31st, in the afternoon, and on the second week, there was a *rump session* where all the students interested could make a short presentation of their work. After the first of these two sessions, everyone briefly introduced himself to the rest of the people, which I think it was a good idea.

Previously to the school, I had many concerns with the organization. For instance, surprisingly, they didn't want to participate in the selection of the CIMPA participants, as if it was not their task (but they are their students!). So, I had to make the selection entirely myself. At some moment, they even proposed that supported students pay directly for their living costs, and after that, CIMPA will reimburse them. Only after several messages I could convince them to obtain the necessary invoices, that would be paid directly by CIMPA. In general, the communication with the organizers was never fluent (many of my messages never got an answer), and in general they seemed not to have read the CIMPA Guidelines for the preparation of the school. I always had the impression (and, according with the feedback I received from some participants, it was not only my impression) that there were several people in the organization that did not communicate each other.

Finally, after many efforts from both parts, the organization of the school was good. The courses took place in a big room in the Faculty of Mathematics, that was very convenient and easily accesible. Speakers stayed in several Guest Houses of the University, located inside the campus at walking distance from the school venue. Students not from Ankara stayed in several dormitories of the University. According with the feedback I obtained from them, the accomodation was very good.

We took meals at Çati Cafe at University, which operates in a self-service basis, paying by weight. Only the students supported by CIMPA were exempted of payment, the price being low according to European standards. Supported students could also have their dinner at the same place.

A common dinner was organised on Wednesday 29th at Çadir Kebap, inside the University Campus. It was partially supported by CIMPA, in order that most of the students could come.



FIGURE 2. Students attending lectures

A total of 15 students received either full or partial support from CIMPA originally. After some changes, 13 participants received full support and confirmed their assistance. Nevertheless, two of them didn't show up (they hadn't neither uploaded their flight tickets nor answered to the messages from Agnès). A black list should be created including these students, that block other students' support.

The final total number of participants was 51. By countries, 18 came from Turkey, 6 from Algeria, 8 from Iran, 4 from Switzerland, 2 from France, 2 from USA, 2 from Tunisia, and 1 from Thailand, Nigeria, Pakistan, Philippines, Russia, Spain, Germany, Singapore and Australia. Among these participants, 24 were women, which represents a remarkable 47%.

The final contribution of CIMPA was 5973,14 €. They were distributed as follows:

Tickets of the students	2875 €
Lodging of the students	1238 €
Restauration	1691,14 €
Contribution to a joint dinner	169 €

FIGURE 3. CIMPA expenses

Other contributions came from

- METU: 10095 TL.
- Sabancı University: 8159 TL.
- Turkish Mathematical Society: 5869 TL.
- Turkish Mathematical Society-Ankara Branch: 1000 TL.
- Research projects of the speakers, in a non precised amount.

To these quantities it is necessary to add my travel and visa expenses, that are 528,41 €.

Finally I would like to thank the effort made by some students in the organization, who were in charge of all the practical things. Specially I thank Kübra, Damla, Şeyma, Bartu and Pinar.

Ankara and Valladolid, September 2018.



FIGURE 4. Group picture of the CIMPA School in Ankara