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## Report on a visit to Scoala Normala Superiorara Bucuresti

*by C.Soule*

I visited SNSB from February 23 till March 7.

1) I gave a course called "Introduction to algebraic K-theory".

The contents of the course was:

$K_0$ ,  $K_1$  and  $K_2$  of a ring, as in Milnor's book on the subject.

Cohomology of groups.

Galois cohomology.

Galois symbol and the Theorem of Merkurjev:  $K_2$  of a field modulo 2 is the same as  $H_2$  with coefficients in  $\mathbb{Z}/2$ .

The course was well attended: 9 students from SNSB, plus 6 or 7 other mathematicians from Bucarest.

The students had organized the time-table of the lectures so that it was possible to have an intensive series of lectures (40 hours in 2 weeks).

2) The students:

Recall that the SNSB admitted 6 mathematics students in 2001, 6 mathematics students in 2002, and 12 computer science students in 2002. One student is studying both maths. and computer science. Among the mathematicians are 4 women. The students come from 4 different universities.

I had students from both years in SNSB (and years 3,4,5 at university).

I cannot fully appreciate their mathematical level, since the exam will be given next month. However I found them very eager to learn (Recall that they follow these lectures in SNSB in addition to those at University; still they managed to find time everyday for this intensive course. I once crossed a student running in the street between the Institute and the University).

I encouraged students to ask questions during the lectures, which they did quite well. Some of the questions they raised were excellent. For instance, they asked if  $K_1$  of a ring where all ideals are principal is reduced to units. I did not know the answer, but I wrote to Weibel who mentioned the beautiful counterexample of Grayson. The students had found the contrary stated in a book on algebra by Shafarevich!

All the students seem also very mature, with clear choices already made, like where to go to next year and which mathematical field to enter.

Six of them are applying to Universities in the US, one of them will go to France. One student told me she does not want to go abroad. This means that, unless SNSB is recognized as a place where one can get a "master" (see below), most of them will stay in SNSB only 2 years instead of the 3 years offered to them.

Several of them (3 to 4) told me they wanted to work on commutative algebra. The influence of Popescu who gives great talks at University and is quite dedicated to students seems to be the main reason for this choice. I advised them not to restrict themselves to algebra only.

3) The SNSB:

3.1 The budget situation is reasonable at this stage, due to the subvention of a foundation, called "Anonimul" (sic!) : 63 500 \$ for 2002-2004.

The students received 70\$ dollars per month last year. This year they get a salary proportional to their grade at the exams, up to 280 \$ per exam, when they have to pass 3 exams. I personally find rather strange that the salary should depend on the grades, although N.Dan tells me it seems to have a terrific effect, students performing much better at the exams!

3.2 The MAIN ISSUE today is to get the SNSB allowed to deliver a master degree, i.e. the diploma after the licence which introduces a student to research by reading an article under the direction of a professor. Till now, only University can deliver such a diploma, although, by a law issued in 2001, the Academy could, in principle, deliver a diploma of the same level. But the latter has not yet been recognized by the ministry of education. (The situation is different for a thesis: there are theses delivered by the Romanian Academy and its many research institutes).

The opinion of the leaders of the SNSB is that getting this master diploma recognized is the crucial step for it to get an official status. Students come to SNSB in order to be in contact with the best romanian mathematicians. At University, they say that the courses offered at the master level are not advanced enough, one reason being that a course requires at least 15 students to be held, when most students prefer easy courses. This is why, as mentionned above, they are ready to go abroad right after their 4th year, in order to obtain there a master degree and a better preparation for their PHD.

#### 4) Contacts with officials:

4.1 A press conference was held during the time of my visit at the Mathematics Institute, about the situation of Romanian mathematics. The current brain drain was one of the main topics mentionned during that meeting. The high level of the national mathematical tradition was also advocated. By contrast, the level in computer science was said to be pretty low.

A couple of journalists came to the meeting and reported about it. The best press coverage was obtained by a professor who said something like: "In order to get nobody jealous, I will say that ALL politicians in this country are stupid". I wondered if I should take this as typical of romanian sense of humor, or as meaning that, 10 years after Ceausescu, there is still a need for relaxation.

4.2. A week later, a small group of mathematicians visited the ministry of education, in order to discuss the SNSB status with a "general director of education". A decree had been issued in January 2003, which plans the financial support of research "centers of excellency". Contrary to our hopes, the administrator we met claimed that this could not apply to the SNSB. And he offered no real alternatives.

4.3. I phoned to the French ambassador in Bucarest, who had already received mathematicians from the Institute two weeks before. He is himself a former mathematician from ENS Paris, and offers his support to the SNSB as part of his will to enhance the cooperation between the two countries. Dan told me they met again recently at the French embassy, where Dan could also talk directly to the minister of education.

4.4. Before leaving France, Jean Dercourt, Secretaire Perpetuel of the Academie des Sciences in Paris, asked me for a report on the situation of SNSB, which had already been discussed last November when the Romanian Academy met in Paris with the Paris Institute. I did so when returning from Bucarest and he suggested to get some French university recognize directly the SNSB by accepting their students without further exam.

I plan also to discuss SNSB with French mathematicians in the Academy.

In conclusion, I enjoyed very much the experience (part of it being that, having a research position in CNRS, I seldom have the opportunity to teach a course)

The SNSB is clearly an excellent initiative, which is very stimulating for young romanian gifted students, as well as refreshing for elder scientists who are led to teach and meet them.

It is urgent that the main deadlock, that is the official recognition of SNSB by romanian authorities, get overcome. Any idea or initiative to help this to happen (like official letters to the ministry of education and the romanian academy) are definitely welcome.