



An international workshop in Kristiansand

“Internationalization of mathematics in the first part of the 20th century”

We take pleasure in inviting everybody to the presentations and the discussions of a workshop on internationalization of mathematics in the first part of the 20th century, to be held on **Friday May 25, 2007** in Kristiansand (Norway) at Agder University College (AUC). The workshop continues on Saturday May 26 with discussions and a scientific excursion to the Abel places in Froland and the Ibsen Museum in Grimstad (both with guided tours): people who are interested please contact organizer Reinhard Siegmund-Schultze (Faculty of Science).

We have distinguished international guests from Denmark, France, Italy, and Great Britain, as well as a special guest who will give an introductory lecture on the famous Swedish mathematician Gösta Mittag-Leffler (see separate flyer).

Schedule of the workshop on Friday, May 25, from 10.00 to 18.00 in the main building of Agder University College

Morning sessions: room B1 007 (Knut Hamsun auditorium)

10.00 **Arild Stubhaug** (statsstipendiat Oslo):

The father of Swedish mathematics, Gösta Mittag-Leffler (1846-1927) and the establishment of an international mathematical institute in the shadows of the World War

11.00 Discussion

11.30 **Henrik Kragh Sørensen** (Universitetet Aarhus, Denmark):

The International Congress of Mathematicians in Oslo 1936 and problems of international communication

12.00 Discussion

Afternoon sessions: room B2-001

13.30 **June Barrow-Green** (Open University, Milton Keynes, UK):

The effects of World War I on Britain's international communication in mathematics

14.00 Discussion

14.15 **Norbert Schappacher** (Université Louis Pasteur, Strasbourg):

Internationalization of applied mathematics at the example of Felix Bernstein's research in mathematical biology and statistics

14.45 Discussion

15.00 **Annalisa Capristo** (Center for American Studies, Rome)

The effects of fascist anti-Jewish persecution on the Italian mathematical milieu

15.45 Discussion and coffee break

16.15 **Josiane Olf-Nathan** (Université Louis Pasteur, Strasbourg):

The second Reichsuniversität Strassburg (1940-45)

16.45 Discussion

17.00 **Reinhard Siegmund-Schultze** (Agder University College, Kristiansand)

Emigration in mathematics as a part of internationalisation

17.30 Discussion and end of workshop about 18.00

Some background and aims of the workshop:

The processes of internationalization of science and of scientific communication are of vital importance in today's economical and scientific developments.

Many problems of scientific communication which existed one hundred years ago (peripheral position of Nordic countries, language barriers, lack of competitive edge, domination of certain scientific cultures over others) exist today as well in a modified form, influenced by the new possibilities and problems of traffic and data communication. Mathematics as a basic intellectual technology was important then and is even more important today in the modern communication technologies.

Lessons to be drawn from international developments in mathematics between 1900 and 1950 lie on several levels:

At the turn from the 19th to the 20th century new developments occurred such as a re-emergence of applied mathematics which with its manifold aspects in computer development, mathematical biology, economy, warfare and others have influenced modern society to a considerable degree. Initiatives launched at that time in the organisation of applications and of mathematical education by Felix Klein (Germany), Elling B. Holst (Norway), Emile Borel

and H. Poincaré (France), G. H. Hardy (England), M. Picone (Italy), and Gösta Mittag-Leffler (Sweden) still have much potential for reconsideration today in a period of problems in the recruitment of personnel for the sciences, and mathematics in particular.

Nationalistic feelings and strategies for internationalisation were without any doubt important factors influencing the various mathematical cultures before and between the two World Wars. They continue to exist today under very different political conditions of globalisation and economic competition with science and mathematics playing an increased role in it.

The recent broad discussion on problems like Fermat's last theorem, the Poincaré-conjecture, and fractal geometry show the intellectual stimulus of classical mathematical problems for the development of mathematics and the sciences today. Problems of pure mathematics, such as the ones mentioned and others formulated in David Hilbert's famous talk on mathematical problems in 1900, have gradually influenced the intellectual discussion even in the public domain (via popular books and the press) and are keep the importance of the natural science and of mathematics visible before broader parts of the population.

By including the social and educational aspects of mathematics in the workshop, the prospective audience will hopefully also include non-specialists of mathematics, among them students and teachers.

Some abstracts of planned presentations

Arild Stubhaug

The father of Swedish mathematics, Gösta Mittag-Leffler (1846-1927) and the establishment of an international mathematical institute in the shadows of the World War

The talk starts with a short overview of the life and scientific and organisational work of the famous mathematician, whose career was largely based on his international connections, particularly to German, French, and Finnish mathematicians. The main part of the presentation is devoted to the foundation, around 1916, of the international mathematical research institute in Stockholm-Djursholm, which is still an important centre today and is named after Mittag-Leffler. It will be shown that Mittag-Leffler continued throughout the World War his policies of supporting international mathematical communication, which he had pursued with his journal "Acta Mathematica" since 1882. Based on rich archival sources in Stockholm, the investigation shows the deeper motives for ML's longings for a rapprochement of the opponents in the war, particularly the French and the Germans. These

motives lay particularly in ML's fear of Russian imperialism, both pre-revolutionary and Bolshevik, which was closely intertwined with ML's deep interest in the situation of Finland as a nation and in the Finnish-Swedish relations. The talk will show that ML's strong and international business interests played a role in his political outlook as well. As to the revival of international mathematical communication after the war, ML's disappointment about broken promises to give the next international congress after 1912 to Scandinavia contributed to his reservation against the scientific boycott policies of the Entente states.

Henrik Kragh Sørensen

The International Congress of Mathematicians in Oslo 1936 and problems of international communication

In 1936, the tenth *International Congress of Mathematicians* (ICM) was organised in Oslo, the capital of Norway. Since 1897 in Zürich, mathematicians had gathered for the ICM at intervals of three or four years in various mathematical centres in Europe and in North America. The outbreak of World War I had meant a discontinuation of the congresses and, in the aftermath, mathematicians from the Allied countries debated strongly who was to be included in the future "international" community of mathematicians. When the 1932 ICM in Zürich accepted the invitation from the Norwegian mathematicians, it implicitly acknowledged the role of Scandinavian mathematicians and at the same time again chose a politically neutral venue for the congress.

By the mid-1930s, the geo-political situation had polarised to such an extent that even a lofty discipline such as mathematics could not remain immune political doctrines. The present paper analyses four different aspects of the interaction between mathematics and international politics surrounding the 1936 ICM in Oslo. First, the position of the organisers is analysed as they argued for a trans-national mediating role for mathematics. Second, focus is put on the German delegation and its political organisation. Third, the absence of Italian and Soviet mathematicians is analysed with respect to the underlying political contexts. Finally, before the summary and some conclusions, the balancing of powers is considered with particular emphasis on the role of the North American mathematicians and their political agenda.

The talk – which is contributing to a joint project with Reinhard Siegmund-Schultze – makes use of published sources, archival sources, and Norwegian newspapers to bring forth the political agenda, discussions, and rhetoric, that was often subdued but, nevertheless, influenced this the last ICM before World War II.

Annalisa Capristo

The effects of fascist anti-Jewish persecution on the Italian mathematical milieu

In my paper I am going to consider the impact of the anti-Semitic laws on the Italian mathematical milieu at the end of the Thirties. Figures on the «aryanization» of this sector of Italian academia will be provided, in regard to the institutions and the scientists involved. I will also make some reference to the premonitory signs of this exclusion, i.e. the unsuccessful nomination of Jewish mathematicians to the Accademia d'Italia, which was established by Mussolini in 1926. Another aspect which will be considered is the reaction of Italian non-Jewish mathematicians to the ostracism against their colleagues and of some foreign scientists, who were invited by the Academy to the Volta Congress on Mathematics which would have been taken place in Rome in October 1939. Finally, I will shortly refer to the consequences that the persecution against the Jewish scholars - coupled with the political conditions under the Fascist regime - had in aggravating the isolation and the gap between the Italian and the international mathematical community between the two world wars.

Reinhard Siegmund-Schultze

Emigration in mathematics as a part of internationalisation

The emigration of mathematicians from Europe after 1933 and the ensuing shift of the world center of mathematics from Europe to the United States is arguably the most important historical result of Nazi rule for mathematics. This result is comparable in importance at most with the reorientation towards fields of applied mathematics due to the war, which, in part, was also promoted by emigration. Much of today's hotly debated problems in mathematics world-wide (such as the relative advantages and disadvantages of the various national educational and school systems, the need for the classical European background in analysis, communication systems in research) cannot be discussed without reference to that very important historical event of emigration which is at the same time a fundamental part of internationalization of mathematics. The talk reports on work in progress connected to a book on mathematicians refugees to appear with Princeton University Press 2007 or 2008.

Kristiansand, May 2007

Responsible for organisation: Reinhard Siegmund-Schultze, AUC, Faculty of Sciences