Seminar Sophus Lie

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Marius Sophus Lie (1842–1899)

About Sophus Lie

"My life is actually quite incomprehensible for me. As a young man, I had no idea that I was blessed with originality. Then, as a 26-year-old, I suddenly realized that I could create. I read a little and began to produce. In these years, 1869–1874, I had a lot of ideas which, in the course of time, I had developed only very imperfectly. In particular, it was group theory and its great importance for the differential equations which interested me." – S. Lie.

http://www.math.uit.no/seminar/Lie_biog.htm.

Marius Sophus Lie (1842–1899) was born in Norway. He was taught mathematics by Ludwig Sylow at the University of Christiania. A turning point came when he read papers on geometry by Poncelet and Plucker. In 1869, Lie went to Berlin where he and Felix Klein became friends. The two started working on transformation groups. Because of the French-German war Lie decided to return to Christiania (now Oslo) where he obtained his PhD. Klein suggested that his student Friedrich Engel study under Lie and assist him in the preparation of his large unpublished theory. Lie collaborated with Engel for nine years. They jointly published "Theorie der Transformationsgruppen" in three volumes in 1893. This was Lie's major work on continuous groups of transformations.

In 1886 Lie succeeded Klein in the Chair of Mathematics at Leipzig with Engel as his assistant. Because of his growing illness, in 1898 he returned to Christiania where he died the next year.

Brief History of the Seminar

Seminar Sophus Lie is now an international seminar of mathematicians interested in the theory of Lie groups and their wider horizons. It was founded in Germany in 1989–90, just after the wall separating East and West Berlin came down. Since the end of World War II, mathematical research and education in East and West Germany, while arising from the same tradition, had been separate. The communist regimes had a phobia against contacts between eastern and western scholars. As a further impediment they erected the Berlin Wall in 1961. After that there was essentially no interaction. Each side knew little of the scholarly activities (or mathematicians) of the other. When the wall came down, communication could finally begin again.

The first order of business in the autumn of 1989 was to reconnect scientists and scholars from both sides. The Seminar Sophus Lie was one of those attempts. It was supported by the Deutsche Forschungsgemeinschaft (DFG) and also by the local university administrations from all four universities involved: Darmstadt and Erlangen from the west and Leipzig and Greifswald from the east (historically, Leipzig was particularly important

Seminar Sophus Lie XXXV, Budapest, Hungary

in Lie's life). The founders of the seminar were *Helmut Boseck* (Greifswald), *Karl Heinrich Hofmann* (Darmstadt), *Konrad Schmüdgen* (Leipzig), and *Karl Strambach* (Erlangen).

The first meeting was in Leipzig (coincidentally the meeting started the day the first Gulf War began). The speakers were:

K. Schmüdgen (Leipzig)
K.H. Hofmann (Darmstadt)
G. Czichowski (Greifswald)
N. Dörr (Darmstadt)
H. Schlosser (Greifswald)
U. Zimmermann (Darmstadt)
P. Plaumann, K. Strambach (Erlangen)
R. Matthes (Chemnitz)

For more details see http://math-www.upb.de/user/hilgert/static/Seminare/jan91.html.

Meetings then rotated around these four universities. Participants got to know each other and as time went on, cooperations began to firm up. As one might guess from the historical background, the first steps were not all that easy.

The organizers had two main goals:

1. Retain the idea of a peripatetic seminar each semester – if possible.
2. Try to document the seminars by making regular seminar reports. These were originally called "Seminar Sophus Lie Reports".

There was financial support for the "Reports" from DFG and from the Technische Hochschule Darmstadt (as it was then called). The university was willing to offer support from time to time but not to commit itself to longer term plans.

The original efforts gave birth to a wide range of long-term effects. Seminar Sophus Lie still meets once every semester (typically for a Friday-Saturday). Its geographic range gradually expanded. The seminar enjoyed an astonishing welcome by both younger and older mathematicians. Without this acceptance, flourishing of the seminar in a period of 18 years could not have happened.

Over the years it had participants from more and more countries, such as Austria, Belgium, Bulgaria, the Czech Republic, Croatia, Denmark, England, Finland, France, Holland, Hungary, Italy, Norway, Poland, Romania, Sweden and Switzerland. Meetings have so far been held in:

Leipzig (1991 and 1992)
Metz, France (1999, 2004)
Darmstadt (1991, 1993, 1994, 1997, 2002, 2005, 2007)
Stuttgart (1999)
Erlangen (1991, 1993, 1996, 2002)
Bedlewo, Poland (2000)
Greifswald (1992, 1994, 1997, 2001)
Berlin (2001)
Clausthal (1995, 1998)
Paderborn (2004)

Bielefeld (1995, 1998, 2003, 2007)
Nancy, France (2005)
Vienna, Austria (1996, 2000, 2003, 2006)
Budapest, Hungary (2008)
Cluj-Napoca, Romania (2008).

The next meeting is to be held in Paderborn (January 2009).

Since 1993 the seminars have received no regular support; only the actual host institute tries to get some local funding. In spite of this fact, more and more people attend the meetings.

The founders of the seminar should be pleased with the fruits of their efforts.

Journal of Lie Theory

One of the most important and lasting effects is the development of *Journal of Lie Theory*. While there was an early agreement that "Seminar Sophus Lie" and the "Journal of Lie Theory" were separate entities and concepts, the founders of the Seminar see them linked in their genesis more than most of us. There were several Oberwolfach Meetings on Lie Theory. Although these meetings were independent of Seminar Sophus Lie, there was a substantial overlap of participants. The meetings were devoted to the same topics that were active in the first meetings of Seminar Sophus Lie. They were documented by books published by DeGruyter Verlag, Berlin.

Oberwolfach was an excellent international platform to discuss the foundation of a new international journal on Lie theory. Ernest Borisovich Vinberg made the suggestion to call it the "Journal of Lie Theory" (JOLT). After a year or two, JOLT evolved from the Seminar Sophus Lie Reports, published by Norbert Heldermann Verlag. The journal has been a real success – internationally as well.

Originally, at every seminar meeting there was a report on the development and well-being of the journal; since both the seminar and the journal are thriving, this is no longer necessary.

JOLT is electronically available via its homepage at the European Mathematical Information System (see http://www.emis.de/journals/JLT/ for more details about the journal).

Seminar Sophus Lie XXXV, Budapest, Hungary

Seminar Sophus Lie XXXV was held 27–29 March 2008 at the *Alfréd Rényi Institute of Mathematics, Hungarian Academy of Sciences*, in Budapest, Hungary. The organizers were *Alice Fialowski* and *Ágnes Szilárd*. The meeting was partially supported by the Hungarian Academy of Sciences. It had about 40 participants with a number of PhD students from different countries. The speakers at the meeting were:

Faouzi Ammar (Sfax)
Dietrich Burde (Vienna)
Ágota Figula (Debrecen)
Helge Gloeckner (Paderborn)
Johannes Huebschmann (Lille)
Andrey Lazarev (Leicester)

Abdenacer Makhlouf (Mulhouse)
Martin Markl (Prague)
Karl-Hermann Neeb (Darmstadt)
Michael Penkava (Eau Claire)
Claude Roger (Lyon)
Troels Roussau Johansen (Kiel)
Sergei Silvestrov (Lund)
Aleksander Strasburger (Warsaw)
Cornelia Vizman (Timisoara)
Friedrich Wagemann (Nantes)
Boris Walter (Paderborn)

For more details see the web page http://math-www.upb.de/user/hilgert/static/Seminare/mar08.html.

We very much hope that this successful European event continues to operate with regular financial support and more and more mathematicians and students getting involved.

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Alice Fialowski [fialowsk@cs.elte.hu] received her undergraduate and doctoral degrees from the Eötvös Loránd University, Budapest, in functional analysis. She spent her postgraduate studies in Moscow where she received the academic candidate's degree in mathematics. After that she spent several years in Switzerland, Germany and the USA. She was a faculty member at UC Davis (USA) for five years and became a professor there. In 1994 she returned to her home country, Hungary, and since then she has worked at the Eötvös Loránd University. Her research areas are Lie theory, representation, cohomology and deformation theory.

Ágnes Szilárd [szilard@renyi.hu] received her PhD from Ohio State University in 1999 in singularity theory. After being a postdoctoral fellow at Barnard College, Columbia University, she returned to Hungary in 2003 and now works at the Alfréd Rényi Institute of Mathematics in Budapest, Hungary, as a research fellow/scientific secretary.

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Applicants should provide a curriculum vitae, a publication list indicating five significant papers (with links for downloading), a statement of current and future research plans, and reports on teaching experience, together with the names and addresses of five potential referees. As the University of Basle would like to increase its female staff, women are strongly encouraged to apply. Applications should be sent to Prof. E. Parlow, Dean, Faculty of Science, Klingelbergstrasse 50, 4056 Basel, Switzerland with a electronic copy (pdf or zip) to Dekanat-Philnat@unibas.ch

The deadline for receipt is 31st October 2008. For additional information please contact Prof. H. Kraft, Mathematisches Institut, Rheinsprung 21, 4051 Basel, Switzerland. Hanspeter.Kraft@unibas.ch or http://www.math.unibas.ch

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