

Prof. Dr. Martin Schlichenmaier  
President of the SML

28 February 2017

**Prof. Dr. Helge Holden**  
**IMU Secretary**  
**International Mathematical Union**  
**NTNU Trondheim**  
**Norway**

**Concerns:** Application of the Grand-duchy of Luxembourg for the International Mathematical Union Full Membership.

Dear Members of the Executive Committee of the IMU,

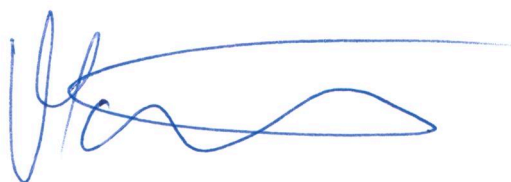
Luxembourg is one of the last countries in central Europe being not yet a member of the IMU. In fact, the sole university of the country was only founded in 2003. Nevertheless, the mathematical research at the mathematics department flourished within these years and augmented to a reasonable size. We think it is time that Luxembourg joins the IMU.

Based on our request, the Government decided in its meeting on 25.11.2016 to ask for the IMU membership. During the same decision process, the Société mathématique du Luxembourg (SML) - Luxembourg Mathematical Society was determined as adhering institution.

As president of the SML I ask herewith to grant the Grand Duchy of Luxembourg and its mathematicians the full membership of the IMU. Information about the state of mathematics in Luxembourg can be found in the attached document. Based on the small size of the country I assume that the Category I would be the most appropriate.

Sincerely Yours

Martin Schlichenmaier



## Application of Luxembourg to become a Full Member of the IMU

The Grand-Duchy of Luxembourg is a small country inside of central Europe. Currently it has a little bit less than 600 000 inhabitants.

The industrial sector of Luxembourg, which was dominated by steel until the 1960s, has since diversified to include chemicals, rubber, and other products. During the past decades, growth in the financial sector has more than compensated for the decline in steel production. Services, especially banking and finance, account for the majority of its current economic output.

The University of Luxembourg (UL) <sup>1</sup> is the only public university in Luxembourg. It was founded in October 2003. Prior to that, there were several higher educational institutions supplying a partial higher education. Essentially, before this time Luxembourgish students had to go abroad in order to complete their studies at a university (usually to Belgium, France, Germany, Austria, and the United Kingdom). The new university has made it possible for these students to complete their studies in their own country. Furthermore, at the UL now there a a large number of international students studying and doing research.

The university was founded with the motto of an research oriented university. One of the reasons for its founding was to help to diversify the economic situation in Luxembourg and to prepare the country even better for new technologies. The university has three faculties and the Interdisciplinary Centre for Security, Reliability and Trust (SnT), and the Luxembourg Centre for Systems Biomedicine (LCSB). Beside direct block grants from the government competitive grants are given to the researchers via the Fond National de Recherche (FNR)<sup>2</sup>. Of course, the researchers of the UL are also active and successful in applying for European research support.

At the moment the UL has roughly 6 500 students and 240 professors.

The mathematics research unit of the university <sup>3</sup> (RMATH) is part of the Faculty of Sciences, Technology and Communications. It is the most important entity doing mathematical research in Luxembourg. It has currently 11 professors and in total 70 researchers. It carries out research on an international level, both in fundamental and applied aspects of mathematics. Five core research directions are represented in the unit: (1) Algebra and number theory, (2) Geometry and mathematical physics,

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<sup>1</sup><http://www.uni.lu/>

<sup>2</sup><https://www.fnr.lu>

<sup>3</sup>Beside the UL there is only the small Luxembourgish branch of the Miami University, USA, called Miami University Dolibois European Center. It does not have mathematics in its study program. Hence, it will not play any role in this application.

(3) Geometric and harmonic analysis, (4) Mathematical modelling, including decision theory, (5) Probability theory and mathematical finance.

In the period 2012 - 2015 (this was the most recent evaluation period) the unit produced a number of important mathematical results which generated a total of 333 refereed (international) publications. The RMATH organised 30 international conferences and schools. Its members gave 562 talks at conferences, other universities and research centers. The unit actively participates in several international research networks, taking responsibility in their steering committees, acting as members of journal editorial boards and panels of funding agencies and many more. The RMATH has research collaboration agreements with the Mathematical Institute of the Polish Academy of Sciences Mathematical Institute, the Steklov Mathematical Institute, and the Mathematics Institute of the Higher School of Economics in Moscow.

Outside the RMATH, but still inside the UL, there are other research mathematicians working e.g. in Computer Science, Finance, Computational Mechanics, in the Interdisciplinary centers SnT and LCSB.

Outside of the UL research mathematicians are working in the Luxembourg Institute of Science and Technology (LIST) which is a technology oriented public financed research institute, in the banking sector, in the service and in the production industry of Luxembourg.

The research mathematicians are mainly organised in the Société mathématique du Luxembourg (SML) - Luxembourg Mathematical Society. The SML will be the adhering institution for the IMU. Currently the SML has roughly 50 members.

Beside research mathematicians, Luxembourg has also quite a number of teachers for secondary education. These teachers are organised in the Association des Mathématiciens Luxembourgeois (AML). The AML has currently 200 members and see its activities in the field of secondary education. In particular, it is very active in relation to mathematics olympiads. In fact, the country of Luxembourg is already member of the IMU suborganisation International Commission on Mathematical Instruction (ICMI).

## Statistical Material

1. Number of universities in the country where mathematics is taught: **1**
2. List of universities with significant research activities in mathematics:  
**University of Luxembourg**
3. Number of (university) professors in the country: **13**
4. Number of research mathematicians in the country (estimated): **140**

5. Mathematical Societies:

Société mathématique du Luxembourg (SML) - Luxembourg Mathematical Society (50 members)

l'Association des Mathématiciens Luxembourgeois (AML). This is the association of mathematics teachers in secondary education (200 members)

6. Well-known mathematicians located in Luxembourg:

- (a) Prof. Dr. Franck Leprévost
- (b) Prof. Dr. Jean-Luc Marichal
- (c) Prof. Dr. Sergei Merkulov
- (d) Prof. Dr. Ivan Nourdin
- (e) Prof. Dr. Martin Olbrich
- (f) Prof. Dr. Hugo Parlier
- (g) Prof. Dr. Giovanni Peccati
- (h) Prof. Dr. Norbert Poncin
- (i) Prof. Dr. Jang Schiltz
- (j) Prof. Dr. Jean-Marc Schlencker
- (k) Prof. Dr. Martin Schlichenmaier
- (l) Prof. Dr. Anton Thalmaier
- (m) Prof. Dr. Gabor Wiese

7. Estimated number of refereed mathematical international publications: **140 per year**

8. Mathematical journals published in the country:

**Travaux mathématiques.** Published by the University of Luxembourg.

9. Educational Activities.

The Mathematics Research Unit (RMATH) of the UL is responsible for the Bachelor education in Mathematics, the Master education (with the tracks General mathematics, financial mathematics, industrial mathematics and mathematics education) and the PhD education in mathematics.

Additionally the RMATH is engaged in a number of outreach activities addressing the general public and the pupils of secondary schools.

10. During the period 2012-2015 the RMATH organised either inside or outside of Luxembourg 30 conferences and schools. See the appendix.

### **Adhering Organisation of Luxembourg:**

The Luxembourg Mathematical Society (SML)  
University of Luxembourg, Mathematical Research Unit  
Maison de Nombre  
6, avenue de la Fonte  
L-4364 Esch-sur-Alzette, Grand-Duch de Luxembourg  
T +352 46 66 44 6676,      sml@uni.lu

**President:** Prof. Dr. Martin Schlichenmaier  
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**Secretary:** Prof. Jean-Luc Marichal  
jean-luc.marichal@uni.lu

### **Appendix: Conferences organised by the RMATH (inside and outside of Luxembourg)**

#### **2015**

1. Higher Geometry and field theory, University of Luxembourg, 09-11 December 2015
2. Conference Algebra and Group Theory (in Honour of Otto Kegel), Mulhouse, 21-24 October 2015
3. School and Conference GEOQUANT 2015, ICMAT Madrid, Spain, 7-18 September 2015
4. Noncommutative Geometry and Higher Structures, Università Sapienza di Roma, 31 Aug - 04 Sep 2015
5. Computational geometry in non-Euclidean spaces, Nancy, 26-28 Aug 2015
6. 3-dimensional Geometric Structures, Representations of Surface Groups and related topics, University of Luxembourg, 13-15 July 2015
7. Frontiers in Serre's Modularity Conjecture, Torsion and Low Weights, University of Luxembourg, 15-19 June 2015
8. DyGeSt WP3, "Geometry, quantization and operator algebras", University of Luxembourg, 10-12 June 2015

#### **2014**

9. Algebra, Deformations and Quantum Groups, CIRM, Marseille, 1-5 December 2014
10. Graphs & Decisions, University of Luxembourg, 27-29 October 2014

11. Workshop on Galois Representations 2014, University of Luxembourg, 19-21 November 2014
12. Noncommutative Geometry and Mathematical Physics, Scalea, Italy, 16 - 20 June 2014

## 2013

13. Higher Lie Theory, University of Luxembourg, 9 - 11 December, 2013
14. International Year of Statistics' Conference, Parc Bellevue Luxembourg, 26 -27 November 2013
15. AA at UNILU (Algebraic Analysis and related topics), University of Luxembourg, 4 - 6 November, 2013
16. ProbaGeo 2013, University of Luxembourg, 28 - 31 October, 2013
17. Geoquant 2013, Vienna, Austria, 19 - 30 August 2013
18. Higher Algebras and Lie-infinity Homotopy Theory, University of Luxembourg, 25 - 28 June 2013
19. Galois representations modulo prime powers, University of Luxembourg, 17 - 21 June 2013
20. Noncommutativity and Physics Workshop 2013, Bayrischzell, 24 - 27 May 2013
21. 85th Workshop on General Algebra, AAA85, University of Luxembourg, 30 January - 2 February 2013

## 2012

22. Workshop on the Breuil-Mézard Conjecture, University of Luxembourg, 17 - 18 December 2012
23. Conference on the Occasion of Martin Schlichenmaier's 60th Birthday, University of Luxembourg, 10 - 12 December 2012
24. Workshop on Graded Algebra and Geometry, University of Luxembourg, 5 - 7 December 2012
25. Symmetries in Differential Geometry and Mathematical Physics, University of Luxembourg, 3 - 6 September 2012
26. Workshop on Gauge Theory and Noncommutative Geometry, University of Luxembourg, 19 - 21 June 2012
27. Seminar Sophus Lie, University of Luxembourg, 15 - 16 June 2012 1st Joint Conference of the Belgian, Royal Spanish and Luxembourg Mathematical Societies, Liège, Belgium, 6 - 8 June 2012
28. PL 2 US Workshop, University of Luxembourg, 1 - 2 March 2012
29. Winter School on Galois Theory, University of Luxembourg, 15 - 24 February 2012