

**Fields Institute for Research in Mathematical Sciences
Atlantic Association for Research in the Mathematical Sciences
Atlantic Algebra Centre (AAC)
Network of Ontario Lie Theorists (NOLT)**

International Workshop
Enveloping Algebras and Representation Theory
August 28 – September 1, 2014
Memorial University of Newfoundland
St John's, Newfoundland and Labrador

Report

Universal enveloping algebras of Lie algebras appeared more than a century ago as one of the major tools in Lie Theory. They find many applications in Differential Geometry and Mathematical Physics, and are indispensable to many directions of research in representation theory of Lie groups and algebras. With the increasing interest in infinite-dimensional representations, the role of enveloping algebras becomes even more significant. More recently, universal enveloping algebras have appeared in the theory of nonassociative algebras other than Lie (alternative, Jordan, Malcev and their super analogs), which are of growing importance in the most advanced areas of mathematics and physics where traditional approaches fail to work. In addition, the Hopf algebra structure of universal enveloping algebras lends itself to quantization, leading to the celebrated Drinfeld - Jimbo “quantum groups”. Far-going generalizations of the latter have recently appeared in the theory of Hopf Algebras in connection with the classification of pointed Hopf algebras. Thus, Enveloping Algebras is a vibrant area of research, with many mathematicians around the globe working and hundreds of papers published.

The aim of this workshop was to discuss the current state of research in the area of Enveloping Algebras and their applications, primarily in Representation Theory. We invited several prominent mathematicians to give lectures illuminating the main achievements in these areas and outline the prospects of further research. There were a number of longer research talks as well as some shorter research communications, in particular by graduate students and postdoctoral fellows.

The total number of participants was 38; 17 of them were students and postdoctoral fellows, primarily associated with AAC and NOLT, but also from other universities in Canada and abroad. The number of international participants was 14, from 7 countries. The total number of Canadian participants was 24, from outside of Atlantic Canada was 13.

The current workshop was the first organized jointly by AAC (Yuri Bahturin, Margaret Beattie and Mikhail Kochetov) and NOLT (Yuly Billig and Kirill Zaynullin).

The financial help was provided by Fields Institute for Research in Mathematical Sciences, Atlantic Association for Research in the Mathematical Sciences, MUN Office of Research, Dean of Science and Department of Mathematics of Memorial University of Newfoundland. The web pages of the workshop can be found at <http://www.mun.ca/aac/CurrentEvents.php>. The schedule and abstracts of talks is at <http://www.mun.ca/aac/Workshops/NextWork/13-8-2014.pdf>

The list of invited speakers included

1. Alberto Elduque (Univeristy of Zaragoza, Spain)
2. Vyacheslav Futorny (University of Sao Paulo, Brazil)
3. Antony Joseph (Weizmann Institute, Israel)
4. Victor Kac (Massachusetts Institute of Technology, USA)
5. Vladislav Kharchenko (Universidad Nacional Autónoma de México)
6. Vladimir Mazorchuk (University of Uppsala, Sweden)
7. Erhard Neher (University of Ottawa)
8. José María Pérez Izquierdo (University of La Rioja, Spain)
9. Alexander Premet (University of Manchester, UK)
10. Ivan Shestakov (Unversity of Sao Paulo, Brazil)

On August 30, the participants had a sightseeing tour and were involved in informal discussions.

Breakdown of expenses and revenues

1. Expenses

a. Airfare and per diem allowance for invited speakers:	\$13,382.35
b. Local Accommodation for invited speakers:	\$10,356.99
c. Local transportation for invited speakers:	\$269.50
d. Support for 12 Students:	\$5,200
e. Refreshment breaks:	\$1,590.83
f. Printing services and stationery:	\$286.10
g. Total of expenses:	\$31,085.77

2. Revenues

a. Registration fees:	\$1,650
b. Fields Institute:	\$10,000
c. Memorial University Office of Research:	\$7,500
d. AARMS:	\$7,500
e. AAC Budget:	\$4,435.77
f. Total of revenues:	\$31,085.77

3. Revenues minus Expenses – Nil

Yuri Bahturin
Director
Atlantic Algebra Centre