

Introduction [Loops '15 Conference, Ohrid, Macedonia, 30.6. – 4.7. 2015]

Commentationes Mathematicae Universitatis Carolinae, Vol. 57 (2016), No. 4, 411–412

Persistent URL: <http://dml.cz/dmlcz/145944>

Terms of use:

© Charles University in Prague, Faculty of Mathematics and Physics, 2016

Institute of Mathematics of the Czech Academy of Sciences provides access to digitized documents strictly for personal use. Each copy of any part of this document must contain these *Terms of use*.



This document has been digitized, optimized for electronic delivery and stamped with digital signature within the project *DML-CZ: The Czech Digital Mathematics Library* <http://dml.cz>

INTRODUCTION

This issue consists of papers that were presented at the international conference Loops '15, which was held at the Congress Center in Ohrid, Macedonia, 30 June – 04 July, 2015. The conference was preceded by Workshops Loops '15, 28 June – 30 June. The conference site is owned by Cyril and Methodius University in Skopje, and the support of the university was essential. Further support came from the Association for Information and Communication Technologies (Skopje, Macedonia) and from Goce Delcev University in Stip. The brewery Pivara Skopje provided some of its products gratis; this sponsorship was warmly appreciated by the participants.

The events were attended by fifty seven mathematicians from eighteen countries and by several family members and partners. The conference continued the tradition of Loops'99, Loops'03, Loops'07 and Loops'11 with an aim to establish, every four years, a major forum open to all aspects of loop and quasigroup theory. All the preceding conferences were held in the Czech Republic.

The theory of quasigroups and loops is a broad field, quite difficult to define precisely. Geometrical connections that were so important when the field was established, receive far less attention today. On the other hand, the connections to combinatorics continue to be a major source of inspiration, one of the reasons being applications of quasigroups in cryptography. These facts were reflected by two of the invited talks. Anthony B. Evans spoke on *Applications of complete mappings and orthomorphisms of finite groups*, and Smile Markowski presented a survey called *Design of crypto primitives based on quasigroups*.

One of the main aspects of contemporary loop theory is its deep connection to the theory of groups. This was manifested in the two remaining invited talks. Michael K. Kinyon described the present state of the art regarding *Loops with commuting inner mappings* and Gabor P. Nagy spoke about *Bol loops and decompositions in groups*. The former talk was also concerned with applications of automated deduction tools in loops, which is another major connection of contemporary loop theory to other parts of mathematics.

Out of the 50 contributed talks, 12 were concerned with structural loop theory, 10 with connections to cryptography and 5 with connections to coding theory, 7 had a certain geometric flavor (including those that dealt with the algebraic theory of quandles) and 6 were connected in that or other way to a combinatorial aspect of quasigroup theory.

The Loops conferences are traditionally accompanied by an issue of the journal Quasigroups and Related Systems that is distributed at the conference. The issue (volume 23, 2015, No. 1) contains two papers that correspond to the invited talks of Evans and Markovski. The issue also contains articles with material covering the three courses of the workshops. These are *Describing cyclic extensions of Bol loops* by Stephen M. Gagola III, *A guide to self-distributive quasigroups, or latin*

quandles by David Stanovský and *Three lectures on automorphic loops* by Petr Vojtěchovský. Finally, the issue contains a short commemorative article on the life and work of Galina Borisovna Belyavskaya who died in May 2015. She was an important member of the Chisinau loop and quasigroup theory school, and a kind person who will be missed by many.

The Program Committee consisted of Orin Chein, Aleš Drápal (secretary), Tuval Foguel, Danilo Gligoroski, Alessandro Grishkov, Alexander Kreuzer, Hala Pflugfelder (honorary chair), J. D. Phillips, Liudmila Sabinina, Victor Shcherbavcov, David Stanovský and Petr Vojtěchovský.

The Local Organizing Committee was headed by Smile Markovski. He was assisted by Verica Bakeva, Vesna Dimitrova, Danilo Gligoroski, Natasha Ilievska, Hristina Mihajloska, Aleksandra Mileva, Aleksandra Popovska-Mitrovikj, Pance Ribarski and Simona Samardjiska.

The local organizers are to be credited for the warm and casual atmosphere that contributed greatly to the success of the conference. The beauty of Lake Ohrid and the surrounding mountains, as well as the richness of historic monuments, were other factors contributing to the success of the conference.

More information about the conference can be found at

<http://loops.finki.ukim.mk/index.php>

We warmly thank the editorial board of *Commentationes Mathematicae Universitatis Carolinae* for making it possible to publish the proceedings of the conference in their journal. Special thanks go to Jan Rataj (Editor-In-Chief), Roman Lávička (Executive Editor) and Lucie Croninová (Technical Editor).

Since the proceedings appear as a regular issue of the journal, they will be cited in a standard way. However, where they are cited as proceedings, the editorial credit should go to A. Drápal, M. K. Kinyon and J. D. Phillips (who are also the authors of this introduction).