

DEMONSTRATIO MATHEMATICA

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UNIVERSAL ALGEBRA, QUASIGROUPS AND RELATED SYSTEMS

From May 23 until May 28, 1989, there was a conference "Universal algebra, quasigroups and related systems" in Jadwisin, a small resort near Warsaw. The Polish Civil Engineering Union Home was a center both for accommodation and for the scientific programme. Almost 80 people from 9 countries (Britain, Canada, Czechoslovakia, Germany, Libya, Poland, USA, USSR, Yugoslavia) took part in the conference. The main aim was to present results and discuss topics in universal algebra and quasigroups with emphasis on the connections between the two areas, as well as some other topics, in particular axiomatic classes of algebras, some special classes of grupoids and other algebras.

The scientific programme consisted of 10 invited plenary expository lectures by G.B. Belyavskaya, B. Ganter, T. Kepka, I.M. Mowsisyan, J. Plonka, B.I. Plotkin, J.D.H. Smith, D. Pigozzi, R. Quackenbush, and L.V. Sabinin, and 33 contributed half-hour talks in 11 thematic sections. The lectures and talks were complemented by sometimes very animated and interesting discussions and comments. The atmosphere created by the participants was very pleasant.

The first 24 papers of this volume were presented at the conference or with results related to the programme. The Organizing Committee would like to thank all the people who agreed to act as referees for these papers. We also would like to thank the Institute of Mathematics of Warsaw Technical University for some financial assistance, and the Pedagogical University in Opole and the University of Toruń for inviting several guests from Czechoslovakia and Germany.

2 Universal algebras, quasigroups and related systems

The organizing committee consisted of: R. Godowski, Z. Lonc, A. Romanowska (Chair), B. Roszkowska, J.D.H. Smith, T. Traczyk, A. Trakul, W. Zarębski.

Scientific programme

**Tuesday, 23.05.1989**

16:30-16:45 Official opening

17:00-18:00 R.W. Quackenbush: Universal algebraic aspects of quasigroups and combinatorics

**Wednesday, 24.05.1989**

9:00-10:00 I.M. Movsisyan: Representations of semigroups, right quasigroups and hyperidentities

*n*-groups, Chairman: L.V. Sabinin

10:30-11:00 W. Dudek: On *m*-semiabelian *n*-ary groups

11:00-11:30 F.N. Sohackij: Associativity of *n*-ary operations

Median Algebras, Chairman: J. Płonka

12:00-12:30 H. Dráškovičová: Discrete perfect modular median algebras

12:30-13:00 M. Kolibiar: Median groups

15:30-16:30 B. Ganter: On the union of algebras

Universal Algebra, Chairman: J. Dudek

17:00-17:30 E. Brožíková: Universal quasigroup identities

17:30-18:00 J. Pomykała: Lattices of definable sets in some approximation spaces

**Thursday, 25.05.1989** Chairman: W. Bartol

9:00-10:00 G.B. Belyavskaya: About some questions of quasigroup theory

10:10-11:10 T. Kepka: Multiplication groups of quasigroups

15:30-16:30 J. Płonka: Some constructions of algebras

Quasigroups, Chairman: T. Kepka

17:00-17:30 T. Ihringer: Multiplication groups of quasigroups

elementary combinatorics

17:30-18:00 M.D. Kitoroage: On some quasigroups defined by inner mappings

Constructions of Algebras, Chairman: J. Czelakowski

17:00-17:30 A. Wojtunik: Free algebras in varieties defined by  $F_1$ -regular and  $F_2$ -symmetric identities

17:30-18:00 T. Wesolowski: On algebras having the semilattice structure

**Friday, 26.05.1989**

9:00-10:00 B.I. Plotkin: Homotopy of quasigroups and universal algebras

Modes, Chairman: J.D.H. Smith

10:30-11:00 J. Dudek: Mediality and minimal clones

11:00-11:30 V.V. Ignatov: Qasivarieties of convexors

12:00-12:30 A.B. Romanowska: Semilattice sums of modes

12:30-13:00 B. Roszkowska: Graphs and symmetric idempotent and entropic quasigroups

Universal Algebra

12:00-13:00 J. Słomiński: The satisfiabilities and varieties induced by functor dynamics and functor dynamics determining the usual varieties and hypervarieties of algebras

15:30-16:30 J.D.H. Smith: Representation theory of quasigroups

Quasigroups, Chairman: L. Bican

17:00-17:30 A.D. Keedwell: On proper loops of order  $n$  in which each non-identity element has left order  $n$

17:30-18:00 K.W. Johnson: Quasigroup determinants

Partial Algebras, Chairman: M. Kolibiar

17:00-17:30 K. Denecke: On primal partial algebras I

17:30-18:00 H.J. Hoehnke: On primal partial algebras II

**Saturday, 27.05.1989**

9:00-10:00 D. Pigozzi: Connections between universal Horn logic, quasi-equational logic, and the theory of data types

Sheaf Theory and Logic, Chairman: B. Ganter

10:30-11:00 G. Jarzembski: Presheaves of finitely definable operations in universally axiomatizable classes of algebras

11:00-11:30 P. Idziak: Sheaf representation for congruence permutable centerless algebras

Structure Theory, Chairman: B. Quackenbush

12:00-12:30 K. Glazek: On decomposition of graphs into Płonka sums and some algebras connected with graphs

12:30-13:00 B. Šešelja, A. Tepavcevic: Special elements in a weak congruence lattice

Grupoids, Chairman: A.D. Keedwell

10:30-11:00 A. Drápal: On couples of companions

11:00-11:30 A. Grzaślewicz: Translations and translative partitions of QD-grupoids

Rings and Semigroups, Chairman: B.I. Plotkin

12:00-12:30 L. Bican: Some categories of modules

12:30-13:00 R. Šulka: On some closure operators on semigroups

15:30-16:30 L.V. Sabinin: Algebraic structures of nonlinear geometric algebra

Geometric Algebra, Chairman: K. Johnson

17:00-17:30 N. Endres: Semidirect products of symmetric groupoids

17:30-18:00 L.B. Sbitneva: Quasigroups and s-spaces

**Sunday, 28.05.1989, Chairman: E. Gedeonová**

9:00-9:30 G.B. Belyavskaya: Nuclei and centre of a quasi-group  
9:45-10:15 J. Galuszka: On minimal extensions of sequences  
10:30-11:00 A. Chronowski: Relationships between the theory of  $n$ -groups and the Schrier extensions groups  
11:15-11:45 J. Galanová: Idempotent algebras on the tensor product

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