

Novosibirsk State Technical University

# Algebra and Model Theory 15

Collection of papers

edited by M. Shahryari and S. V. Sudoplatov

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# Algebra and model theory

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## INTRODUCTION

### **Algebra and model theory 15**

The 17th International Summer School-Conference “Problems Allied to Model Theory and Universal Algebra” was held on 19–26 of June 2025 at Sobolev Institute of Mathematics, Novosibirsk State Technical University NETI and at the Camping Center “Erlagol” in Altai mountains. The School was organized by Algebra and Mathematical Logic Department of Novosibirsk State Technical University (NSTU NETI) and Sobolev Institute of Mathematics of Siberian Branch of Russian Academy of Sciences (IM SB RAS). The School was supported by Grant of International Mathematical Center in Akademgorodok and by Faculty of Applied Mathematics and Computer Science of NSTU NETI. The school-conference included both online and in-person talks. At the school-conference, there were participants from Russia, Kazakhstan, Uzbekistan, China, Iran, Oman, France, Greece, Hungary, Poland. They made 50 talks. Within the school-conference, the discussions on actual problems on Model Theory, Algebra and related subjects were held. Information about the conference is posted on the conference website <https://erlagol.ru>.

*The Organizing Committee  
of the School-Conference*

**Programme  
of 17th International Summer  
School-Conference  
“Problems Allied to Model Theory  
and Universal Algebra”**

**June 19, Thursday**

**Chairperson S.V. Sudoplatov**

- 9:00 – 9:10, Opening Ceremony
- 9:10 – 9:50, A.A. Stepanova, E.L. Efremov, S.G. Chekanov (Vladivostok, Russia), On the stability of the class of pseudo-finite polygons (online)
- 9:55 – 10:35, B.S. Baizhanov (Almaty, Kazakhstan), Countable models of small ordered theories (online)
- 10:40 – 11:20, R. Sklinos (Beijing, China), First-order sentences in random groups (online)
- 11:20 – 11:50, Coffee Break
- 11:50 – 12:30, M. Shahryari, O. Al-Raisi (Muscat, Oman), Finite CSA groups and generalizations (online)
- 12:35 – 13:15, B.P. Poizat (Lyon, France), Logicians and Geometers on Algebraic Groups (online)
- 13:20 – 14:00, A.I. Stukachev (Novosibirsk, Russia), Union, Intersection and Comparison of Linguistic Structures

**Chairperson V.V. Verbovskiy**

- 15:00 – 15:40, A.A. Iwanow (Opole, Poland), Homogeneous structures associated with complete theories of two variables (online)
- 15:45 – 16:25, G. Czédli (Szeged, Hungary), Counting congruences: the largest and beyond for lattices, and the maximum for congruence-distributive algebras (online)
- 16:25 – 16:50, Coffee Break
- 16:50 – 17:10, O.V. Kravtsova (Krasnoyarsk, Russia), Quasi-fields with Hall’s condition
- 17:15 – 17:45, G.S. Suleymanova (Abakan, Russia), On graph automorphisms of exact enveloping algebras of the Chevalley algebra (online)
- 17:50 – 18:20, D.V. Solomatin (Omsk, Russia), On minimally complete Martynov’s semigroups with zero (online)
- 18:25 – 18:45, I.A. Sakharov (Vladivostok, Russia), On the semantic and syntactic rigidity of projective unars (online)

18:50 – 19:10, A.S. Savin (Novosibirsk, Russia), Spectra of spherical orderability of finite groups

### **June 20, Friday**

#### **Chairperson B.Sh. Kulpeshov**

9:00 – 9:40, V.N. Zhelyabin, A.S. Mamontov (Novosibirsk, Russia), Just-infinite Jordan Banach algebras (online)

9:45 – 10:25, P.S. Kolesnikov (Novosibirsk, Russia), Simple finite Novikov conformal algebras

10:30 – 11:10, S.P. Odintsov (Novosibirsk, Russia), Weakly implicative logics: approaches to defining definitional equivalence and definability

11:10 – 11:40, Coffee Break

11:40 – 12:20 I.B. Kozhukhov (Moscow, Russia), Artinian and Noetherian properties in polygons over semigroups and their generalizations (online)

12:25 – 13:05, N.L. Polyakov, D.I. Savelyev (Moscow, Russia), On preorders between Rudin-Keisler and Comfort preorders and a model-theoretic characterization of the Comfort preorder

13:10 – 13:50, V.L. Usol'tsev (Volgograd, Russia), Rees congruence algebras in some subclasses of class of algebras with one operator and main ternary and nullary operations

#### **Chairperson N.L. Polyakov**

15:00 – 15:30, A. Gkantzounis, F. Skarpelos (Athens, Greece), Logical topologies and separation axioms in the institution-independent model theory framework (online)

15:35 – 15:55, A.A. Davlatbekov (Denau, Uzbekistan), On homomorphisms of parastrophes of linear and alinear quasigroups (online)

16:00 – 16:20, A.E. Chubiy (Novosibirsk, Russia), On structural unions of models (online)

16:20 – 16:40, Coffee Break

16:40 – 17:00, A.M. Popova (Ivleva) (Novosibirsk, Russia), On automorphisms of the integral group rings of finite groups (online)

17:05 – 17:25, O.V. Bryukhanov (Novosibirsk, Russia), Bijections of a group which commute with its automorphisms (online)

17:30 – 17:50, D.S. Khramchenok (Moscow, Russia), Axiomatizability of classes of polygons and semimodules (online)

17:55 – 18:15, S.B. Malyshev (Novosibirsk, Russia), Geometrical properties of elementary theories

18:20 – 18:40, I.A. Emelyanenko (Novosibirsk, Russia), Continuation of automorphisms of countable models under elementary embeddings

**June 22, Sunday****Chairperson S.V. Sudoplatov**

9:00 – 9:40, A.E. Mironov (Novosibirsk, Russia), Algebraic non-integrability of magnetic billiards

9:50 – 10:30, V.V. Przyjalkowski (Moscow, Russia), Hodge level of weighted complete intersections

10:40 – 11:20, A.I. Bondal (Moscow, Russia), A categorical approach to computational complexity theory

11:30 – 12:10, F.Yu. Popelensky (Moscow, Russia), Spaces with quaternion conjugation

12:20 – 13:00, N.A. Shchuchkin (Volgograd, Russia), Ternary  $L$ -quasi-groups and their applications for word transformation

**Chairperson N.A. Shchuchkin**

15:00 – 15:40, D.L. Tkachev, E.A. Biberdorf (Novosibirsk, Russia), On the spectrum of a linear model describing the flow of a polymer liquid in an infinite cylindrical channel

15:45 – 16:05, E.V. Mishchenko (Novosibirsk, Russia), Frames and some properties of frames in finite-dimensional spaces

16:10 – 16:30, S. Yin Siyao (Novosibirsk, Russia), Billiard Trajectories inside Cones

16:35 – 16:55, N.A. Daurtseva (Novosibirsk, Russia), On the realization of various classes of almost Hermitian structures on manifolds of dimension 6

**June 23, Monday**

Free day

**June 24, Tuesday****Chairperson A.P. Pozhidaev**

9:00 – 9:40, B.Sh. Kulpeshov (Almaty, Kazakhstan), The number of countable models and algebras of binary isolating formulas

9:50 – 10:30, V.V. Verbovskiy (Almaty, Kazakhstan), On the properties of functions in ordered o-stable groups of finite convexity rank

10:40 – 11:20, S.V. Sudoplatov (Novosibirsk, Russia), Preservation of properties by types and expansions of structures

11:30 – 12:10, I.I. Pavlyuk (Novosibirsk, Russia), Structural properties of families of group theories

12:20 – 13:00, D.Yu. Emelyanov (Novosibirsk, Russia), Algebras of binary formulas for operations on graphs

**Chairperson V.Yu. Gubarev**

15:00 – 15:30, A.V. Chekhonadskikh (Novosibirsk, Russia), M.N. Rudometkina (Tomsk, Russia), Construction of polynomial design for a low order control system as a flexible process

15:35 – 16:05, N.Yu. Galanova (Tomsk, Russia), On cuts of ordered algebraic structures

16:10 – 16:40, A.I. Zabarina, E.A. Fomina (Tomsk, Russia), On the sets  $K_p$  in some finite groups

**June 25, Wednesday****Chairperson V.L. Usol'tsev**

9:00 – 9:40, A.P. Pozhidaev (Novosibirsk, Russia), Isomorphisms and automorphisms of simple Prelian algebras and Novikov algebras

9:50 – 10:30, F.A. Dudkin (Novosibirsk, Russia), The problem of isomorphism of groups acting on trees

10:40 – 11:20, V.Yu. Gubarev (Novosibirsk, Russia), Rota-Baxter operators of zero weight on the algebra of matrices of the 3rd order

11:30 – 12:00, E.A. Shaporina (Novosibirsk, Russia), On the construction of cyclic extensions of free groups

12:05 – 12:35, I.M. Buchinsky (Omsk, Russia), Centralizer dimension and Noetherian property by equations of partially commutative two-step nilpotent groups

12:40 – 13:00, A.V. Vaseneva (Novosibirsk, Russia), Ranks of equationality of families of formulas and elementary theories

13:00, Closing Ceremony

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