
Curriculum Vitae



Personal information

NAME, SURNAME Sergejs Solovjovs
DATE AND PLACE OF BIRTH 25th April 1977, Riga, Latvia
GENDER Male
NATIONALITY Latvian
CONFESSION Evangelical
MARITAL STATUS Single
ADDRESS Institute of Mathematics, Faculty of Mechanical Engineering
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Education

DATE	ORGANIZATION	DEGREE
1995	Ventspils 6th Secondary School, Ventspils, Latvia	School Leaving Certificate
1999	University of Latvia, Riga, Latvia	Bachelor Degree in Mathematics
2001	University of Latvia, Riga, Latvia	Master Degree in Mathematics with Distinction
2007	University of Bremen, Bremen, Germany	Doctoral Degree in Natural Sciences (Dr. rer. nat.)

Professional experience

START	END	ORGANIZATION	POSITION
1999	2000	A/S "SWH Tehnoloģija" (Address: S. Eizensteina iela 29a, LV-1079 Riga, Latvia)	Computer Programmer
2001	2006	Institute of Mathematics, Latvian Academy of Science and University of Latvia (Address: Akademijas laukums 1, LV-1524, Riga, Latvia)	Research Assistant
2002	2004	Department of Mathematics, University of Latvia (Address: Zellu iela 8, LV-1002 Riga, Latvia)	Teaching Assistant
2008	2012	Department of Mathematics, University of Latvia (Address: Zellu iela 8, LV-1002 Riga, Latvia)	Researcher
2006	2015	Institute of Mathematics and Computer Science, University of Latvia (Address: Raina bulvaris 29, LV-1459 Riga, Latvia)	Researcher

2012	2014	Department of Mathematics and Statistics, Faculty of Science, Masaryk University (Address: Kotlarska 2, 611 37 Brno, Czech Republic)	Researcher
2014	...	Institute of Mathematics, Faculty of Mechanical Engineering, Brno University of Technology (Address: Technicka 2896/2, 616 69 Brno, Czech Republic)	Lecturer

Languages

MOTHER TONGUE Russian

LANGUAGE	SPEAKING ABILITIES	READING ABILITIES	WRITING ABILITIES
Latvian	Good	Good	Good
English	Good	Good	Good
Czech	Good	Good	Good
German	Weak	Good	Weak
Italian	Poor	Poor	Poor

Scholarships and awards

DATE	AWARD RECEIVED
2003	DAAD Scholarship for 10 months
2005	SOCRATES/ERASMUS Scholarship for 4 months

Research interests

CATEGORY THEORY Categorical topology, categories of ordered algebraic structures

ALGEBRA Quantale-like structures, C*-algebras and non-commutative topology

Scientific activities

MEMBER OF Latvian Mathematical Society

EDITORIAL BOARD MEMBER OF INTERNATIONAL JOURNALS “International Journal of Mathematics and Mathematical Sciences”, “Journal of Intelligent & Fuzzy Systems”, “Journal of Uncertainty in Mathematics Science”, “The Scientific World Journal (Algebra subject area)”

REVIEWER FOR Mathematical Reviews (56 reviews), Zentralblatt MATH (70 reviews)

REFEREE FOR INTERNATIONAL JOURNALS 41 journal

Hobbies and interests

Traveling, reading, listening music

Sergejs Solovjovs (Brno, July 25, 2016)

Motivation Letter

Research

I'm a pure mathematician, whose main research interests lie in *categorical fuzzy topology*, i.e., in application of methods of category theory to investigation of different fuzzy topological structures. Since the notion of fuzziness is based in various algebraic concepts such as, e.g., quantales, semi-quantales, frames, *etc.*, I'm interested in the study of topological properties generated by them. More precisely, I'm trying to develop the theory of fuzzy topology, induced by an arbitrary variety of algebras, which has been recently called *categorically-algebraic (catalg) topology*. This new framework incorporates the most important approaches to fuzzy topology and provides convenient means of interaction between different theories. The main advantage of the new setting is the fact that the catalg framework ultimately erases the border between traditional and fuzzy developments, producing a theory, which underlines the algebraic essence of the whole (not only fuzzy) mathematics and thus, propagating algebra as the main driving force of modern exact sciences. The proposed machinery exploits the catalg version of the notion of *topological system*. This generalization provides a wide range of applications in different areas of computer science, mathematics and physics. For example, the concept of topological system is closely related to the so-called *state property system*, introduced to serve as the basic mathematical structure in the Geneva-Brussels approach to foundations of physics. Additionally, *contexts* of formal concept analysis can also be put under the catalg roof.

Lately, I have turned my attention to exploring relationships between non-commutative topology (motivated by quantum structures and developed in the framework of C*-algebras or, more recently, quantales) and fuzzy topology, motivated by the challenge of finding a link between *quantumness* and *fuzziness*. The interest in that area arose from some results on quantale-like structures, e.g., quantale modules and algebras, obtained in my PhD thesis and further publications. The investigation gave rise to the concept of *quantale algebroid*, generalizing the notion of *quantaloid*, the latter having numerous applications in theoretical computer science, and, moreover, recently claimed to serve as a category-theoretic basis for many-valued mathematics.

My current research is related to a particular branch of categorical topology (called *monoidal* or *lax-algebraic topology*), which took its origin in the representation of the category of topological spaces and continuous maps as the category of lax algebras and lax homomorphisms for the canonical extension of the ultrafilter monad on the category of sets and maps to the category of sets and relations. Monoidal topology is based in the categorical concept of monad and the algebraic notion of quantale. For more information, see section "Scientific Activities" further on.

Teaching

During my research career, I have assisted in giving several lecture courses on the undergraduate level, and gave four (short) lecture courses on the graduate level myself (see section "Teaching Activities" further on).

Possible academic referees

1. Prof. COSIMO GUIDO (Department of Mathematics and Physics, University of Salento, P.O. Box 193, 73100 Lecce, Italy), e-mail: cosimo.guido@unile.it
2. Prof. AUSTIN C. MELTON (Departments of Computer Science and Mathematical Sciences, Kent State University, Kent, Ohio, USA 44242), e-mail: amelton@kent.edu
3. Prof. JAN PASEKA (Department of Mathematics and Statistics, Masaryk University, Kotlarska 2, 611 37 Brno, Czech Republic), e-mail: paseka@math.muni.cz
4. Prof. STEPHEN E. RODABAUGH (Department of Mathematics and Statistics, Youngstown State University, Youngstown, Ohio, USA 44555-3347), e-mail: serodabaugh@ysu.edu
5. Prof. WALTER THOLEN (Department of Mathematics and Statistics, York University, Toronto, Ontario, Canada M3J 1P3), e-mail: tholen@mathstat.yorku.ca

Scientific Activities

Attended conferences

2005

1. S. Solovjovs, H. Herrlich, *Tensor Product in the Category JCPos*, 69th Workshop on General Algebra/20th Conference for Young Algebraists, March 18 - 20, 2005, Potsdam, Germany.
2. S. Solovjovs, *On the Category M-JCPos*, Summer School on General Algebra and Ordered Sets 2005, September 5 - 10, 2005, Malá Morávka, Czech Republic.

2006

1. S. Solovjovs, *Completion of Partially Ordered Sets*, 71st Workshop on General Algebra/21st Conference for Young Algebraists, February 9 - 12, 2006, Bedlewo, Poland.
2. S. Solovjovs, *Categories of Lattice-Valued Sets as Categories of Arrows*, Summer School on General Algebra and Ordered Sets 2006, September 3 - 9, 2006, Radějov, Czech Republic.

2007

1. S. Solovjovs, *A Note on Nuclei of Quantale Algebras*, 73rd Workshop on General Algebra/22nd Conference for Young Algebraists, February 1 - 4, 2007, Klagenfurt, Austria.
2. S. Solovjovs, *From Quantale Algebras to Topological Spaces*, 74th Workshop on General Algebra, June 7 - 10, 2007, Tampere, Finland.
3. S. Solovjovs, *A Representation Theorem for Quantale Algebras*, International Conference on Order, Algebra, and Logics/22nd annual Shanks Lectures, June 12 - 16, 2007, Nashville, Tennessee, USA.
4. S. Solovjovs, *On Coproducts of Quantale Algebras*, Conference on Semigroups, Acts and Categories with Applications to Graphs, June 27 - 30, 2007, Tartu, Estonia.
5. S. Solovjovs, *A Representation Theorem for Quantale Algebroids*, Summer School on Algebra and Ordered Sets 2007, September 2 - 7, 2007, Tále, Slovakia.
6. S. Solovjovs, *On Fuzzification of Algebraic and Topological Structures*, 5th Conference of the European Society for Fuzzy Logic and Technology, September 11 - 14, 2007, Ostrava, Czech Republic.
7. S. Solovjovs, *Quantifiers on Quantale Algebras*, 75th Workshop on General Algebra/23rd Conference for Young Algebraists, November 2 - 4, 2007, Darmstadt, Germany.

2008

1. S. Solovjovs, *Sobriety and Spatiality in Varieties of Algebras*, International Conference on Topological Algebras and their Applications (ICTAA) 2008, January 24 - 27, 2008, Tartu, Estonia.
2. S. Solovjovs, *On a Generalization of Goguen's Category Set(L)*, 9th International Conference on Fuzzy Set Theory and Applications (FSTA 2008), February 4 - 8, 2008, Liptovský Ján, Slovak Republic.
3. S. Solovjovs, *From Quantale Algebroids to Topological Spaces*, 29th Linz Seminar on Fuzzy Set Theory, February 12 - 16, 2008, Linz, Austria.
4. S. Solovjovs, *On Monadic Quantale Algebras*, Applications of Algebra XII, March 3 - 9, 2008, Zakopane, Poland.

5. S. Solovjovs, *Sobriety and Spatiality in Varieties of Algebras*, 76th Workshop on General Algebra, May 22 - 25, 2008, Linz, Austria.
6. S. Solovjovs, *Variable-Basis Topological Systems*, International Category Theory Conference 2008, June 22 - 28, 2008, Calais, France.
7. S. Solovjovs, *Localification of Variable-Basis Topological Systems*, Summer School on General Algebra and Ordered Sets 2008, August 31 - September 6, 2008, Třešt', Czech Republic.

2009

1. S. Solovjovs, *Embedding Topology into Algebra*, 30th Linz Seminar on Fuzzy Set Theory, February 3 - 7, 2009, Linz, Austria.
2. S. Solovjovs, *Limits and Colimits of Variable-Basis Topological Systems*, Applications of Algebra XIII, March 9 - 15, 2009, Zakopane, Poland.
3. S. Solovjovs, *Fuzzy Algebras as a Framework for Fuzzy Topology*, 77th Workshop on General Algebra/24th Conference for Young Algebraists, March 20 - 22, 2009, Potsdam, Germany.
4. S. Solovjovs, *On a Generalization of the Concept of State Property System*, 78th Conference on General Algebra, June 11 - 14, 2009, Bern, Switzerland.
5. S. Solovjovs, *On a Coalgebraic Category of Variety-Based Topological Systems*, Topology, Algebra and Categories in Logic (TACL 2009), July 7 - 11, 2009, Amsterdam, The Netherlands.
6. S. Solovjovs, *Generalized Fuzzy Topology versus Non-Commutative Topology*, Summer School on General Algebra and Ordered Sets 2009, September 5 - 11, 2009, Stará Lesná, Slovak Republic.

2010

1. S. Solovjovs, *Composite Variety-Based Topological Theories*, 10th International Conference on Fuzzy Set Theory and Applications (FSTA 2010), February 1 - 5, 2010, Liptovský Ján, Slovak Republic.
2. S. Solovjovs, *Powerset Operator Foundations for Categorically-Algebraic Fuzzy Set Theories*, 31st Linz Seminar on Fuzzy Set Theory, February 9 - 13, 2010, Linz, Austria.
3. S. Solovjovs, *Categorically-Algebraic Frameworks for Priestley Representation Theory*, 79th Workshop on General Algebra, February 12 - 14, 2010, Olomouc, Czech Republic.
4. S. Solovjovs, *Categorically-Algebraic Dualities*, Applications of Algebra XIV, March 8 - 14, 2010, Zakopane, Poland.
5. S. Solovjovs, *Hypergraph Functor and Attachment*, 80th Workshop on General Algebra/Workshop on Non-Classical Algebraic Structures, June 1 - 6, 2010, Bedlewo, Poland.
6. S. Solovjovs, *Categorically-Algebraic Topology*, International Conference on Algebras and Lattices, June 21 - 25, 2010, Prague, Czech Republic.
7. S. Solovjovs, *Categorically-Algebraic Dualities in Progress*, Summer School on General Algebra and Ordered Sets 2010, September 4 - 10, 2010, Malenovice, Czech Republic.

2011

1. S. Solovjovs, *Variable-Basis Categorically-Algebraic Dualities*, 32nd Linz Seminar on Fuzzy Set Theory, February 1 - 5, 2011, Linz, Austria.
2. S. Solovjovs, *Dual Attachment Pairs in Categorically-Algebraic Topology*, 81st Workshop on General Algebra, February 3 - 6, 2011, Salzburg, Austria.
3. S. Solovjovs, *Functorial Semantics of Topological Theories*, Applications of Algebra XV, March 7 - 13, 2011, Zakopane, Poland.

4. S. Solovjovs, *Algebraically-Topological Systems*, The Second International Conference on Order, Algebra, and Logics, June 6 - 10, 2011, Kraków, Poland.
5. S. Solovjovs, *Algebraically-Topological Systems and Attachment*, International Conference on Semigroups, General Algebra, and Applications/82nd Workshop on General Algebra/26th Conference for Young Algebraists, June 24 - 26, 2011, Potsdam, Germany.
6. S. Solovjovs, *Topological Categories versus Categorically-Algebraic Topology*, Topology, Algebra, and Categories in Logic (TACL 2011), July 26 - 30, 2011, Marseilles, France.
7. S. Solovjovs, *Quantale Algebras as a Generalization of Lattice-Valued Frames*, Summer School on General Algebra and Ordered Sets 2011, September 3 - 9, 2011, Svratka, Czech Republic.

2012

1. S. Solovjovs, *Many for the Price of One Duality Principle for Variety-Based Topological Spaces*, Workshop on Category Theory in honour of George Janelidze, on the occasion of his 60th birthday, July 9 - 13, 2012, Coimbra, Portugal.
2. S. Solovjovs, *On a General Fuzzification Procedure for Topological Categories*, Conference on Point-Set and Lattice-Valued Topology, October 18 - 19, 2012, Kent, Ohio, USA.
3. S. Solovjovs, *Tower Extension of Topological Categories*, 1084th AMS Meeting: Special Session on A Survey of Lattice-Valued Mathematics and its Applications, October 20 - 21, 2012, Akron, Ohio, USA.

2013

1. S. Solovjovs, *On Monoidal Characterization of Closed Maps*, 85th Workshop on General Algebra, January 31 - February 2, 2013, Luxembourg.
2. J. T. Denniston, A. Melton, S. E. Rodabaugh, S. Solovjovs, *Lattice-Valued Preordered Sets as Lattice-Valued Topological Systems*, 34th Linz Seminar on Fuzzy Set Theory, February 26 - March 2, 2013, Linz, Austria.
3. S. Solovjovs, *Relational Topological Spaces and Topological Systems*, Applications of Algebra XVII, March 4 - 10, 2013, Zakopane, Poland.
4. S. Solovjovs, *On Monoidal Nuclei*, 86th Workshop on General Algebra, May 30 - June 2, 2013, Olomouc, Czech Republic.
5. S. Solovjovs, *On Morphisms of Lattice-Valued Formal Contexts*, The 4th Novi Sad Algebraic Conference, June 5 - 9, 2013, Novi Sad, Serbia.
6. S. Solovjovs, *Localification Procedure for Affine Systems*, International Category Theory Conference 2013, July 7 - 13, 2013, Sydney, Australia.
7. S. Solovjovs, *Topological Systems versus Attachment Relations*, General Algebra and its Applications: GAIA 2013, July 15 - 19, 2013, Melbourne, Australia.
8. S. Solovjovs, *On Fuzzification of Topological Categories*, Topology, Algebra, and Categories in Logic 2013, July 28 - August 1, 2013, Nashville, Tennessee, USA.
9. S. Solovjovs, *Sobriety-Spatiality Equivalence for Affine Sets and Systems*, 51st Summer School on General Algebra and Ordered Sets, September 1 - 7, 2013, Trojanovice, Czech Republic.

2014

1. S. Solovjovs, M. Stehlík, *On the Category of Lattice-Valued Bornological Spaces*, 12th International Conference on Fuzzy Set Theory and Applications (FSTA 2014), January 26 - 31, 2014, Liptovsky Jan, Slovak Republic.
2. S. Solovjovs, *On a Characterization of the Categories of Preordered Sets and Quasi-Pseudo-Metric Spaces*, 87th Workshop on General Algebra/28th Conference of Young Algebraists, February 7 - 9, 2014, Linz, Austria.
3. S. Solovjovs, M. Stehlík, *Lattice-Valued Bornological Systems or Probabilistic Modelling of Cancer Research?*, 35th Linz Seminar on Fuzzy Set Theory, February 18 - 22, 2014, Linz, Austria.

4. S. Solovjovs, M. Stehlík, *On the Category of Lattice-Valued Bornological Vector Spaces*, Applications of Algebra XVIII, March 10 - 16, 2014, Zakopane, Poland.
5. J. Paseka, S. Solovjovs, M. Stehlík, *Lattice-Valued Bornological Vector Spaces and Systems*, 88th Workshop on General Algebra, June 19 - 22, 2014, Warsaw, Poland.
6. S. Solovjovs, *On Monoidal (Co)nuclei in Monoidal Topology*, 12th Biennial IQSA Meeting: Quantum Structures Olomouc 2014, June 23 - 27, 2014, Olomouc, Czech Republic.

2015

1. J. Paseka, S. Solovjovs, *Categorical Foundations of Variety-Based Bornology*, 89th Workshop on General Algebra, February 26 - March 1, 2015, Dresden, Germany.
2. S. Solovjovs, *On the Category of Affine Systems*, 90th Workshop on General Algebra, June 5 - 7, 2015, Novi Sad, Serbia.
3. S. Solovjovs, *On Monoidal (Co)nuclei and their Applications*, Category Theory 2015, June 14 - 19, 2015, Aveiro, Portugal.
4. J. T. Denniston, A. Melton, S. E. Rodabaugh, S. Solovjovs, *Using Topological Systems to Create a Framework for Institutions*, Topology, Algebra, and Categories in Logic 2015, June 21 - 26, 2015, Ischia, Italy.

2016

1. J. T. Denniston, A. Melton, S. E. Rodabaugh, S. Solovjovs, *Relational Approach to Topological Spaces and Topological Systems*, 13th International Conference on Fuzzy Set Theory and Applications (FSTA 2016), January 24 - 29, 2016, Liptovsky Jan, Slovak Republic.
2. J. T. Denniston, A. Melton, S. E. Rodabaugh, S. Solovjovs, *Sierpinski Object for Affine Systems*, 36th Linz Seminar on Fuzzy Set Theory, February 2 - 6, 2016, Linz, Austria.
3. S. Solovjovs, *On Representation of Lattice-Valued Frames as Quantale Algebras*, 92nd Workshop on General Algebra, May 27 - 29, 2016, Prague, Czech Republic.

Attended workshops

2006

1. S. Solovjovs, *On Some Properties of Comma Categories*, Workshop "Algebra and its Applications", May 5 - 7, 2006, Kokõ, Estonia.

2007

1. S. Solovjovs, *Quantifiers on Quantale Algebras*, Workshop "Algebra and its Applications", May 4 - 6, 2007, Ratnieki, Latvia.

2008

1. S. Solovjovs, *From Quantale Algebroids to Topological Spaces: Fixed- and Variable-Basis Approaches*, Workshop on Algebra, March 27, 2008, Masaryk University, Brno, Czech Republic.
2. S. Solovjovs, *Variable-Basis Topological Systems versus Variable-Basis Topological Spaces*, Workshop "Algebra and its Applications", May 2 - 4, 2008, Viinistu, Estonia.
3. S. Solovjovs, *On Ordered Categories as a Framework for Fuzzification of Algebraic and Topological Structures*, 1st Czech-Latvian Seminar on Advanced Methods in Soft Computing, November 19 - 22, 2008, Trojanovice, Czech Republic.
4. S. Solovjovs, *A Note on Nuclei of Quantale Algebroids*, Workshop on Algebra, October 30, 2008, Masaryk University, Brno, Czech Republic.

2010

1. S. Solovjovs, *On Homomorphisms of Extended-Order Algebras*, Workshop on Lattices, Relations and Kleene Algebras, September 21 - 23, 2010, University College London, London, UK.
2. S. Solovjovs, *Categorically-Algebraic Topology: Theory and Applications*, Research Seminar on Category Theory, October 15, 2010, Faculty of Mathematics, Informatics, and Mechanics, University of Warsaw, Warsaw, Poland.
3. S. Solovjovs, *Lattice-Valued Categorically-Algebraic Topology* (poster presentation), 91st Peripatetic Seminar on Sheaves and Logic (PSSL91), November 27 - 28, 2010, University of Amsterdam, Amsterdam, The Netherlands.

2011

1. S. Solovjovs, *Categorically-Algebraic Topological Theories*, 92nd Peripatetic Seminar on Sheaves and Logic (PSSL92), April 23 - 24, 2011, University of Oxford, Oxford, UK.
2. S. Solovjovs, *On Some Properties of the Category of Extended-Order Algebras*, Workshop "Algebra and its Applications", April 29 - May 1, 2011, Svente, Latvia.

2013

1. S. Solovjovs, *Lattice-Valued Preordered Sets as Lattice-Valued Topological Spaces*, Workshop on Algebraic Methods in Quantum Logic, January 17 - 20, 2013, Ostravice, Czech Republic.

2014

1. S. Solovjovs, *On a Characterization of a Category for Monoidal Topology*, Workshop on Algebraic Methods in Quantum Logic, January 13 - 19, 2014, Mala Moravka, Czech Republic.
2. S. Solovjovs, *Introduction to Monoidal Topology*, Spring Workshop on Algebra and Discrete Mathematics, April 2 - 5, 2014, Svratka, Czech Republic.
3. S. Solovjovs, *On a Lax-Algebraic Characterization of Closed Maps*, 95th Peripatetic Seminar on Sheaves and Logic (PSSL 95), April 26 - 27, 2014, Brno, Czech Republic.

Attended local conferences in Latvia

2000

1. S. Solovjovs and A. Šostaks, *On some Topological Properties Modulo an Ideal*, 3rd Latvian Mathematical Conference, April 14 - 15, 2000, Jelgava, Latvia.

2002

1. S. Solovjovs, *On some Properties of Subfunctors and Quotient Functors*, 4th Latvian Mathematical Conference, April 26 - 27, 2002, Ventspils, Latvia.

2006

1. S. Solovjovs, *Algebraic Properties of Comma Categories*, 6th Latvian Mathematical Conference, April 7 - 8, 2006, Liepāja, Latvia.

2008

1. S. Solovjovs, *Variable-Basis Sobriety and Spatiality*, 7th Latvian Mathematical Conference, April 18 - 19, 2008, Rēzekne, Latvia.

Published papers

- [1] A. Buikis and S. Solovyov, *Influence of input data on the solution of the multiphase liquid flow model*, Math. Model. Anal. **6** (2001), no. 1, 39–47.
- [2] J. T. Denniston, A. Melton, S. E. Rodabaugh, and S. Solovyov, *Lattice-valued preordered sets as lattice-valued topological systems*, Fuzzy Sets Syst. **259** (2015), 89–110.
- [3] J. T. Denniston, A. Melton, S. E. Rodabaugh, and S. Solovyov, *Topological systems as a framework for institutions*, Fuzzy Sets Syst. **298** (2016), 91–108.
- [4] A. Frascella, C. Guido, and S. Solovyov, *Dual attachment pairs in categorically-algebraic topology*, Appl. Gen. Topol. **12** (2011), no. 2, 101–134.
- [5] A. Frascella, C. Guido, and S. Solovyov, *Algebraically-topological systems and attachments*, Iran. J. Fuzzy Syst. **10** (2013), no. 3, 65–102.
- [6] C. Guido and S. Solovyov, *Topological systems versus attachment relations*, Quaest. Math. **37** (2014), no. 4, 455–484.
- [7] J. Paseka and S. Solovyov, *Categorical foundations of variety-based bornology*, Fuzzy Sets Syst. **291** (2016), 132–143.
- [8] J. Paseka, S. Solovyov, and M. Stehlík, *On the category of lattice-valued bornological vectors spaces*, J. Math. Anal. Appl. **419** (2014), no. 1, 138–155.
- [9] J. Paseka, S. Solovyov, and M. Stehlík, *Lattice-valued bornological systems*, Fuzzy Sets Syst. **259** (2015), 68–88.
- [10] J. Paseka, S. Solovyov, and M. Stehlík, *On a topological universe of L -bornological spaces*, Soft Comput. **20** (2016), no. 7, 2503–2512.
- [11] S. Solovjovs, *Some remarks on the category $SET(L)$* , Acta Univ. Latv. **688** (2005), 83–97.
- [12] S. Solovjovs, *On fuzzification of algebraic and topological structures*, Proceedings of the 5th EUSFLAT Conference (M. Štěpnička, V. Novák, and U. Bodenhofer, eds.), vol. II, University of Ostrava, 2007, pp. 395–401.
- [13] S. Solovyov, *On some properties of the forgetful functor $U : SET(L) \rightarrow SET$* , Proc. Latv. Acad. Sci., Sect. B, Nat. Exact Appl. Sci. **57** (2003), 117–120.
- [14] S. Solovyov, *Some remarks on the category $SET(L)$, part II*, Mat. Vesn. **55** (2003), 65–82.
- [15] S. Solovyov, *Some remarks on the category $SET(L)$, part III*, Glas. Mat. **39** (2004), 1–20.
- [16] S. Solovyov, *Categories of lattice-valued sets as categories of arrows*, Fuzzy Sets Syst. **157** (2006), no. 6, 843–854.
- [17] S. Solovyov, *On the category $\mathbf{Set}(\mathbf{JCPos})$* , Fuzzy Sets Syst. **157** (2006), no. 3, 459–465.
- [18] S. Solovyov, *Completion of partially ordered sets*, Discuss. Math., Gen. Algebra Appl. **27** (2007), 59–67.
- [19] S. Solovyov, *On a generalization of Goguen’s category $Set(L)$* , Fuzzy Sets Syst. **158** (2007), no. 4, 367–385.
- [20] S. Solovyov, *Categorical frameworks for variable-basis sobriety and spatiality*, Math. Stud. (Tartu) **4** (2008), 89–103.
- [21] S. Solovyov, *On coproducts of quantale algebras*, Math. Stud. (Tartu) **3** (2008), 115–126.
- [22] S. Solovyov, *On the category $Q\text{-Mod}$* , Algebra Univers. **58** (2008), 35–58.
- [23] S. Solovyov, *A representation theorem for quantale algebras*, Contr. Gen. Alg. **18** (2008), 189–198.
- [24] S. Solovyov, *Sobriety and spatiality in varieties of algebras*, Fuzzy Sets Syst. **159** (2008), no. 19, 2567–2585.
- [25] S. Solovyov, *On ordered categories as a framework for fuzzification of algebraic and topological structures*, Fuzzy Sets Syst. **160** (2009), no. 20, 2910–2925.
- [26] S. Solovyov, *Categorically-algebraic dualities*, Acta Univ. M. Belii, Ser. Math. **17** (2010), 57–100.

- [27] S. Solovyov, *Categorically-algebraic frameworks for Priestley duality*, *Contr. Gen. Alg.* **19** (2010), 187–208.
- [28] S. Solovyov, *From quantale algebroids to topological spaces: fixed- and variable-basis approaches*, *Fuzzy Sets Syst.* **161** (2010), no. 9, 1270–1287.
- [29] S. Solovyov, *Hypergraph functor and attachment*, *Fuzzy Sets Syst.* **161** (2010), no. 22, 2945–2961.
- [30] S. Solovyov, *On fuzzification of the notion of quantaloid*, *Kybernetika* **46** (2010), no. 6, 1025–1048.
- [31] S. Solovyov, *On monadic quantale algebras: basic properties and representation theorems*, *Discuss. Math., Gen. Algebra Appl.* **30** (2010), no. 1, 91–118.
- [32] S. Solovyov, *Variable-basis topological systems versus variable-basis topological spaces*, *Soft Comput.* **14** (2010), no. 10, 1059–1068.
- [33] S. Solovyov, *Extended-order algebras as a generalization of posets*, *Demonstratio Math.* **44** (2011), no. 3, 589–614.
- [34] S. Solovyov, *Fuzzy algebras as a framework for fuzzy topology*, *Fuzzy Sets Syst.* **173** (2011), no. 1, 81–99.
- [35] S. Solovyov, *Generalized fuzzy topology versus non-commutative topology*, *Fuzzy Sets Syst.* **173** (2011), no. 1, 100–115.
- [36] S. Solovyov, *Localification of variable-basis topological systems*, *Quaest. Math.* **34** (2011), no. 1, 11–33.
- [37] S. Solovyov, *A note on nuclei of quantale algebras*, *Bull. Sect. Logic* **40** (2011), no. 1/2, 91–112.
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- [39] S. Solovyov, *On algebraic and coalgebraic categories of variety-based topological systems*, *Iran. J. Fuzzy Syst.* **8** (2011), no. 5, 13–30.
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Submitted papers

- [1] J. T. Denniston, A. Melton, S. E. Rodabaugh, and S. Solovyov, *Relational topological spaces and topological systems*, submitted to Quaest. Math.
- [2] J. T. Denniston, A. Melton, S. E. Rodabaugh, and S. Solovyov, *Classifying categories for many-valued mathematics and topological systems*, submitted to Appl. Categ. Structures.
- [3] J. T. Denniston, A. Melton, S. E. Rodabaugh, and S. Solovyov, *Sierpinski object for affine systems*, submitted to Fuzzy Sets Syst.

Published books

- [1] S. Solovjovs, *On a Categorical Generalization of the Concept of Fuzzy Set: Basic Definitions, Properties, Examples*, VDM Verlag Dr. Müller, 2008 (updated version of the PhD Thesis published as a book).

Research visits

1. Department of Mathematics and Statistics, Faculty of Science, Masaryk University, Brno, Czech Republic: September 7, 2008 - December 8, 2008.
2. Department of Mathematics and Physics, University of Salento, Lecce, Italy: March 26, 2009 - April 29, 2009.
3. Department of Mathematics and Physics, University of Salento, Lecce, Italy: March 28, 2010 - May 1, 2010.
4. Department of Mathematics and Physics, University of Salento, Lecce, Italy: December 11 - 19, 2010.
5. Department of Mathematics and Physics, University of Salento, Lecce, Italy: December 17 - 24, 2011.
6. Department of Mathematics and Statistics, Faculty of Science and Engineering, York University, Toronto ON, Canada: January 1, 2012 - June 30, 2012.
7. Institute for Applied Statistics, Johannes Kepler University, Linz, Austria: August 4 - 31, 2013.
8. Institute for Applied Statistics, Johannes Kepler University, Linz, Austria: October 15 - 18, 2013.

Teaching Activities

Assisted in giving two lecture courses on the undergraduate level at the Department of Mathematics, University of Latvia, Riga, Latvia:

1. Probability theory and statistics
2. Optimization methods

Gave two lecture courses on the graduate level at the Department of Mathematics and Physics, University of Salento, Lecce, Italy:

1. Variety-based topological systems
2. Categorical methods in universal algebra

Gave two lecture courses on the graduate level at the Department of Mathematics and Statistics, Faculty of Science, Masaryk University, Brno, Czech Republic:

1. Elements of monoidal topology
2. Categorical lattice-valued topology

Assisted in giving several lecture courses on the undergraduate level at the Institute of Mathematics, Faculty of Mechanical Engineering, Brno University of Technology, Brno, Czech Republic:

1. General algebra
2. Linear algebra
3. Mathematical analysis I
4. Mathematical analysis II
5. Mathematics I
6. Mathematics II
7. Mathematics III
8. Methods of discrete mathematics

Co-advised PhD thesis of Anna Frascella entitled “Attachment and Topological Systems in Varieties of Algebras” and defended at the Department of Mathematics and Physics, University of Salento, Italy on December 22, 2011.