

Annual Report 2021



ICE-TCS

Icelandic Centre of Excellence
in Theoretical Computer Science

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1 Introduction

The Icelandic Centre of Excellence in Theoretical Computer Science (ICE-TCS) has been active since its establishment on 29 April 2005. This sixteenth annual report provides an overview of the activities of the centre during 2021, which was our second “pandemic year” and the first year in which the centre did not hold its annual Theory Day. It also presents some of the activities in 2022 that are planned at the time of writing and some of the early successes in the first two months of 2022.

This annual report focuses on the main highlights of yet another active year for ICE-TCS. We refer our readers to the data collected at the [centre’s web page](#) for full details. In particular, the news archive for the reporting year is at <http://icetcs.ru.is/news-2021.html>.

2 Executive Summary and Highlights for the Reporting Period

Once again, the calendar year 2021 has been an active one for ICE-TCS, both nationally and internationally, despite the restrictions on what we could do imposed by the pandemic. We were lucky to host the [32nd Nordic Workshop on Programming Theory, NWPT 2021](#), in hybrid mode literally just before new restrictions were imposed in Iceland. Moreover, Tarmo Uustalu co-organised [PPDP/LOPSTR 2021](#) in Tallinn. We also combined a handful of in-person seminars in the [ICE-TCS seminar series](#) with several talks in the second year of our [joint webinar series](#) organized with the Computer Science group at the Gran Sasso Science Institute (GSSI).

The quality and impact of the research carried out by the members of the centre in 2021 is witnessed by the following main achievements.

- The algorithms group published [a paper at STOC 2021](#), which is an ultra-competitive conference (CORE: A*). That paper presents new results on a classic algorithmic problem in the CONGEST model of distributed computation. Moreover, Magnús M. Halldórsson and Alexandre Nolin received the best paper award at SIROCCO 2021 for the paper '[Superfast Coloring in CONGEST via Efficient Color Sampling](#).' The group also finished [a paper](#) that was accepted for [STOC 2022](#).
- The research group [Permuta Triangle](#) within ICE-TCS has continued its work on Combinatorial Exploration, an algorithmic framework that can prove results that so far have required the ingenuity of human combinatorialists, which is described in a [99-page preprint](#) that appeared in February 2022. The group has developed [open-source software](#) that can rederive hundreds of results in the literature in a uniform manner and prove many new ones. A website with all the results is also available at [PermPal.com](#).
- Tarmo Uustalu and his co-workers continued their work on the study of algebraic effects and had a paper accepted at FoSSaCS 2022, which is one of the prime conferences in that field (CORE: A). Tarmo Uustalu was invited to lecture at the [Oregon Programming Languages Summer School](#) and at the [Midlands Graduate School in the Foundations of Computing Science](#). Dylan McDermott and Tarmo Uustalu delivered a [tutorial at ICFP 2021](#) in cooperation with [Exequiel Rivas](#).
- The concurrency group within ICE-TCS published an [article](#) at LICS 2021, which is one of the most-coveted publication venues in “volume B” theoretical computer science (CORE: A*), and two papers at CSL 2021. Luca Aceto was named [Fellow of the European Association for Theoretical Computer Science 2021](#) for “his fundamental contributions to concurrency theory, and outstanding merits for the community of theoretical computer science, in particular as an inspiring president of EATCS.” He was also [keynote speaker at LICS 2021](#).
- ICE-TCS researchers were again successful in their grant applications.
 - Antonis Achilleos (PI), Luca Aceto (co-PI) and Anna Ingólfssdóttir (co-PI) received roughly 369,000 EUR from the Icelandic Research Fund for the project "Mode(l)s of Verification and Monitorability" (2021-2023).
 - Magnús M. Halldórsson received funding from the Icelandic Research Fund for his project "Skorðuð dreifð netalítun" (2021-2023).
 - Luca Aceto was a co-PI in the project “A Framework for Building Secure and Reliable Proof-Carrying Blockchain Applications” led by Mohammad Adnan Hamdaqa, which was also selected for funding from the Icelandic Research Fund for the period 2021-2023.
 - ICE-TCS PhD student Émile Nadeau received a PhD grant for the project "Extending the Combex framework" from the Reykjavik University Research Fund. The grant is worth ISK 5,748,000 (approximately 37,100 EUR).
- On 24 February 2021, Luca Aceto delivered an invited talk entitled "[An operational guide to monitorability](#)" at the Tehran Institute for Advanced Studies (TelAS).

- On 26 February 2021, Tarmo Uustalu delivered an invited talk entitled "Skew X categories and structural proof theory" at the The ForML Lab, Augusta University.
- In the period 15-19 March 2021, Tarmo Uustalu was an invited speaker at the Workshop on Polynomial Functors, where he talked about "Polynomial comonads".
- On 19 March 2021, Antonis Achilleos co-organized the 2021 edition of the The New York Colloquium on Algorithms and Complexity.
- On 23 August 2021, Valentina Castiglioni co-chaired the [Combined 28th International Workshop on Expressiveness in Concurrency and 18th Workshop on Structural Operational Semantics](#). The event was affiliated with CONCUR 2021 (as part of QONFEST 2021).
- In the period 4-6 November 2021, ICE-TCS hosted the [Nordic Workshop on Programming Theory 2021](#) at Reykjavik University. The event featured invited talks by Giovanni Bacci (Aalborg University) and Ornela Dardha (University of Glasgow) and was organised by Antonis Achilleos, Elli Anastasiadi, Dylan McDermott and Tarmo Uustalu.
- On 17 December 2021, Elli Anastasiadi served on the organizing committee of the [New York Colloquium on Algorithms and Complexity 2021](#).

As in previous years, ICE-TCS researchers organized high-quality scientific events at Reykjavik University and elsewhere, increasing the international visibility of the centre and of Reykjavik University as a whole. To wit, apart from the above-mentioned events, we mention that the [joint webinar series](#) with the [Computer Science group at the Gran Sasso Science Institute](#) featured the following talks, in reverse chronological order:

- Phil Husbands (University of Sussex, UK): "Intelligent Robots: threat or opportunity?".
- Noah Giansiracusa (Bentley University, USA): "What Role Does Machine Learning Play in Misinformation?".
- Magnus M. Halldorsson (Reykjavik University, Iceland): "Distributed Graph Coloring".
- Roberta Sinatra (IT University Copenhagen, DK): "Quantifying biases in science".
- Mariangiola Dezani-Ciancaglini (University of Torino, Italy): "Global Types and Event Structure Semantics for Asynchronous Multiparty Sessions".
- Patrizio Pelliccione (GSSI and Chalmers|University of Gothenburg, Sweden): "Robotics Software Engineering: the challenge of mission specification".
- Cristiano Galbiati (GSSI and Princeton University, USA): "From Dark Matter to the Milano Mechanical Ventilator: A Personal Journey".
- Andrea Clementi (University of Rome Tor Vergata): "Sharp Thresholds for a SIR Model on One-Dimensional Small-World Networks".
- Pierre Fraigniaud (Université de Paris and CNRS): "Distributed Runtime Verification".
- Rajeev Alur (University of Pennsylvania, USA): "Syntax-guided Program Synthesis".
- Javier Esparza (Technical University of Munich, Germany): "Recent Advances on Population Protocols".
- Amos Korman (CNRS and IRIF, Université de Paris, France): "How do crazy ants navigate in unreliable environments?".
- Simon Gay (School of Computing Science, University of Glasgow UK): "Session Types for Reliable Distributed Systems".

- Luca Viganò (King's College London, UK): "Security is mortals' chiefest enemy: formalizing the human dimension of cybersecurity".
- Stefano De Sabbata (University of Leicester, UK): "Digital urban geographies".
- Bridget Eileen Tenner (DePaul University, USA): "Permutations and pinnacle sets."
- Luca Trevisan (Bocconi University, Italy): "Graph and Hypergraph Sparsification".

The centre's guest programme was affected by the pandemic. However, in the autumn 2021, ICE-TCS still managed to host three external collaborators (Adrian Francalanza, Karoliina Lehtinen and Niels Voorneveld) and a visiting PhD student from Aalborg University (Mathias Claus Jensen).

ICE-TCS researchers have also continued to serve the community in a variety of leading roles. By way of example, we limit ourselves to mentioning that

- Tarmo Uustalu is the publicity chair and member of the [Executive Board of ETAPS](#).
- Magnús Halldórsson chairs the steering committees of SIROCCO and SWAT, and is a member of the steering committee of ALGOSENSORS and DCOSS.
- Antonis Achilleos is a member of the [Executive Committee of the Scandinavian Logic Society](#).
- Valentina Castiglioni was chosen as PC co-chair of [EXPRESS/SOS](#) 2021 and 2022.
- Luca Aceto was elected as chair of the [editorial board of LIPIcs](#) (Leibniz International Proceedings in Informatics) for a third two-year term. Since 1 March 2019, he has also acted as chair of the Department of Computer Science at Reykjavik University.

2.1 Research Output in 2021

During the reporting period, ICE-TCS researchers based at Reykjavik University published or had accepted one book chapter, 14 journal papers (was 22 in 2020) and 19 conference/workshop papers (as opposed to 17 in 2020). Overall, there has been a slight decrease in the number of publications vis-a-vis those the centre's researchers had in 2020. However, most of the research output of the centre is still published in high-quality venues.

The full list of accepted and published papers authored by members of the centre from Reykjavik University in 2021 is in the appendix at the end of this report.

3 Current Members

During the reporting period, ICE-TCS had eight permanent members at Reykjavik University, seven of whom have ICE-TCS as their primary research centre, namely Luca Aceto, Antonis Achilleos, Eyjólfur Ingi Ásgeirsson (Department of Engineering at Reykjavik University; Scientific

Co-director), Magnús M. Halldórsson (Scientific Director), Anna Ingólfssdóttir (Scientific Co-director), Henning Úlfarsson and Tarmo Uustalu. In addition, the centre has one member at Reykjavik University with primary affiliation with CADIA (Yngvi Björnsson), one at deCODE Genetics (Bjarni V. Halldórsson) and one with a joint affiliation at the University of Iceland and deCODE Genetics (Páll Melsted).

In 2021, the centre hosted the following six postdoctoral researchers supported by research grants from the Icelandic Research Fund:

- Christian Bean (combinatorics),
- Valentina Castiglioni (concurrency theory),
- Dylan McDermott (semantics of programming languages),
- Léo Exibard (concurrency theory, from September 2021),
- Manuela Fischer (algorithmics, July-December 2021) and
- Alexandre Nolin (algorithmics).

During the reporting period, members of the centre supervised seven PhD students affiliated with ICE-TCS, namely

- Elli Anastasiadi (supervised by Luca Aceto and Anna Ingólfssdóttir),
- Duncan Paul Attard (supervised by Luca Aceto, Adrian Francalanza and Anna Ingólfssdóttir),
- Stian Lybech (supervised by Luca Aceto and Mohammad Hamdaqa),
- Yasuaki Morita (supervised by Tarmo Uustalu and Dylan McDermott),
- Emile Nadeau (supervised by Henning Ulfarsson),
- Raphaël Reynouard (supervised by Anna Ingólfssdóttir), and
- Jasmine Xuereb (supervised by Antonis Achilleos and Adrian Francalanza).

All those PhD students are supported by research grants from the Icelandic Research Fund or the Reykjavik University Research Fund. So far, no PhD student affiliated with ICE-TCS has been funded by the Department of Computer Science at Reykjavik University.

Duncan Paul Attard and Jasmine Xuereb are enrolled in a joint Reykjavik University/University of Malta doctorate. In January 2021, Ian Cassar formally obtained his joint Reykjavik University/University of Malta doctorate under the supervision of Luca Aceto and Anna Ingólfssdóttir at Reykjavik University and Adrian Francalanza at the University of Malta.

4 A first look at 2022

Even though one swallow doesn't make a summer, the year 2022 has started well for ICE-TCS and promises to be rich in events and accolades for the centre and its members. For starters, the Icelandic Research Fund announced the results of the grant applications for this year and ICE-TCS researchers are PIs for two of the grant applications that were selected for funding.

- Tarmo Uustalu received funding for his three-year project "Computational effects and high-level control" (approximately 145K € per year).

- Valentina Castiglioni received a three-year postdoctoral grant for her project "Programs in the wild: Uncertainties, adaptability and verification" (roughly 80.2K € per year).

Elli Anastasiadi, Duncan Paul Attard and Emile Nadeau, PhD students at ICE-TCS, received grants from the Reykjavik University Research Fund to support their research in 2022. The overall amount of the grants is 12,165,600 ISK (roughly 86,270 €).

Antonis Achilleos delivered an invited talk at [Logical Foundations Of Computer Science 2022, LFCS 2022](#), which was held in the period 10-13 January 2022. Moreover, the paper "Near-Optimal Distributed Degree+1 Coloring" by Magnus M. Halldorsson, Fabian Kuhn (University of Freiburg), Alexandre Nolin and Tigran Tonoyan (Technion, formerly at ICE-TCS) has been accepted for the scientific programme of STOC 2022.

On 25 February 2022, ICE-TCS hosted a public talk entitled "Technomoral Virtues, Human Flourishing and the Bootstrapping Problem" by Shannon Vallor (University of Edinburgh, UK). The talk was sponsored by the British Embassy in Iceland. Shannon Vallor is Baillie Gifford Chair in the Ethics of Data and Artificial Intelligence at the University of Edinburgh's Edinburgh Futures Institute. A [recording of her talk](#) can be accessed on Vimeo. On 24 March 2022, we will organise a second public event in cooperation with the British Embassy in Iceland, which will be devoted to cyber-security and will see the participation of James Muir (Threat Intelligence Research Lead, BAE Systems Applied Intelligence, UK) and [James Sullivan](#) (Director of Cyber Research at Royal United Services Institute, UK).

The Theory Day 2022 will be held on 29 April 2022 and we hope to attract two or three distinguished speakers from abroad.

Building on the experience of the 32nd Nordic Workshop on Programming Theory organised as a hybrid event in the autumn 2021 at Reykjavik University, we will host the [Logic Colloquium 2022](#) in the period 27 June-1 July 2022. Antonis Achilleos is a member of the PC for that event and Taro Uustalu will co-organise the special session on Logic in Computer Science with [Nicola Galesi](#) (University of Rome "La Sapienza"). Valentina Castiglioni will co-chair [EXPRESS/SOS 2022](#), which will take place co-located with CONCUR 2022. Luca Aceto will deliver an invited talk at ICTCS 2022, the 23rd Italian Conference on Theoretical Computer Science, which will be held in Rome. In keeping with our track record in pre-pandemic years, we look forward to hosting several guests at ICE-TCS. At the time of writing, we know that [Michael Wooldridge](#) (University of Oxford) will visit ICE-TCS in the period 28 May-3 June 2022, that we will host [Joost-Pieter Katoen](#) (RWTH Aachen) at some point in the second half of September 2022, and that [Dror Rawitz](#) (Bar-Ilan University) will spend a one-year sabbatical at ICE-TCS from the autumn semester 2022. Dror will be the first researcher to spend a sabbatical at the centre. We look forward to welcoming him and hope that other colleagues will follow in his footsteps in the future.

5 Summary and Self-Evaluation

Overall, despite the continued impact of the pandemic on the centre's operations, ICE-TCS has maintained a high level of activity during the reporting period. As usual, in our admittedly biased opinion, the centre contributed the majority of all scientific events at Reykjavik University in 2021 and its researchers had a good (and at times excellent) research output, both in terms of quality and quantity. Moreover, we were successful in attracting funding from competitive funding agencies.

Having said so, it is clear that the events and work patterns we all had to endure over the last two years have taken their toll on us. For instance, the year 2021 was the first one in which the centre did not organise its annual Theory Day since its establishment in 2005. For the first time in our history, we talked about organising the Theory Day, but nobody took the lead and made that happen. Moreover, despite the efforts of the organisers, the ICE-TCS seminar series did not really take off in 2021.

It is too early to say whether those are signs of an aging research entity whose enthusiasm is dwindling or whether ICE-TCS researchers have just suffered from the workload and work patterns resulting from a two-year pandemic. We expect that this year will help us clarify the role that ICE-TCS can still play in the future as a hub for research activities, research training and outreach in Theoretical Computer Science in Iceland. We are already working on rekindling our guest programme, using all available resources to do so, organising international events and doing the best work of which we are capable. Time will tell whether we have the energy to sustain the early successes in 2022 throughout the year, but we are optimistic.

Overall, we feel that we are still punching well above our weight and are proud of what we have achieved in 2021. We will keep exploiting all available means to maximise our impact and research collaborations, as we have done since April 2005. Let's hope that 2022 will be a year of rebirth for the members of ICE-TCS and for the centre as a whole!

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Appendix: List of ICE-TCS Publications and Accepted Papers in 2021

Book Chapters

1. Tarmo Uustalu, Niccolò Veltri, Noam Zeilberger. The sequent calculus of skew monoidal categories. In Claudia Casadio, Philip J. Scott, eds., Joachim Lambek: The Interplay of Mathematics, Logic and Linguistics, v. 20 of Outstanding Contributions to Logic Series, pp. 377-406. Springer, 2021. https://doi.org/10.1007/978-3-030-66545-6_11

Journal Papers

1. Luca Aceto, Antonis Achilleos, Adrian Francalanza, Anna Ingólfssdóttir and Karoliina Lehtinen. An operational guide to monitorability with applications to regular properties. *Software and Systems Modelling* 20, pp. 335-361, 2021.
<https://doi.org/10.1007/s10270-020-00860-z>
2. Luca Aceto, Ian Cassar, Adrian Francalanza and Anna Ingólfssdóttir. Comparing controlled system synthesis and suppression enforcement. *Int. J. on Software Tools for Technology Transfer* 23(4), pp. 601-614, 2021.
3. Luca Aceto, Valentina Castiglioni, Anna Ingólfssdóttir, Mathias R. Pedersen and Bas Luttik. On the axiomatisability of parallel composition. *Logical Methods in Computer Science*. To appear.
4. C. Bean, E. Nadeau and H. Ulfarsson. Enumeration of Permutation Classes and Weighted Labelled Independent Sets. *Discrete Mathematics & Theoretical Computer Science*, vol. 22 no. 2, *Permutation Patterns* 2019.
5. K. M. J. De Bontridder, B. V. Halldórsson, M. M. Halldórsson, C. A. J. Hurkens, J. K. Lenstra, R. Ravi, and L. Stougie. Local improvement algorithms for a path packing problem: A performance analysis based on linear programming. *Oper. Res. Lett.* 49(1), pp. 62-68, 2021. <https://doi.org/10.1016/j.orl.2020.11.005>
6. Steven Chaplick, Magnús M. Halldórsson, Murilo Santos de Lima, Tigran Tonoyan. Query Minimization under Stochastic Uncertainty. *Theoretical Computer Science* 895, pp. 75–95, 2021.
7. José Espírito Santo, Luís Pinto, Tarmo Uustalu. Plotkin's call-by-value lambda-calculus as a modal calculus. *J. Log. Algebraic Methods Program.*, to appear.
8. Magnús M. Halldórsson, Guy Kortsarz, Pradipta Mitra, Tigran Tonoyan. Spanning Trees with Edge Conflicts and Wireless Connectivity. *Algorithmica* 83(11), 2021.
9. Magnus M. Halldórsson and Murilo Santos de Lima. Query-Competitive Sorting with Uncertainty. *Theoretical Computer Science* 867, pp. 50-67, 62021.
10. Magnús M. Halldórsson and Tigran Tonoyan. Effective wireless scheduling via hypergraph sketches. *SIAM J. Comput.*, 50(2), pp. 718-759, 2021.
11. Magnús M. Halldórsson and Tigran Tonoyan. Computing inductive vertex orderings. *Information Processing Letters* 172, 2021.
12. Magnús M. Halldórsson and Tigran Tonoyan. Sparse Backbone and Optimal Distributed SINR Algorithms. *ACM Transactions on Algorithms (TALG)* 17(2), 2021.
13. Magnús M. Halldórsson, Toshimasa Ishii, Kazuhisa Makino and Kenjiro Takazawa. Posimodular Function Optimization. *Theoretical Computer Science*, to appear

14. Hendrik Maarand, Tarmo Uustalu. Operational semantics with semicommutations. *J. Log. Algebraic Methods Program.* 121, art. 100677, 2021.
<https://doi.org/10.1016/j.jlamp.2021.100677>

Conference and Workshop Papers

1. Luca Aceto, Antonis Achilleos, Adrian Francalanza, Anna Ingólfssdóttir and Karoliina Lehtinen. The best a monitor can do. In Christel Baier, Jean Goubault-Larrecq, eds., *Proc. of 29th EACSL Ann. Conf. on Computer Science Logic, CSL 2021 (Ljubljana, Jan. 2021)*, v. 183 of *Leibniz Int. Proc. in Inform.*, pp. 7:1-7:23. Dagstuhl Publishing, 2021.
<https://doi.org/10.4230/lipics.csl.2021.7>
2. Luca Aceto, Elli Anastasiadi, Valentina Castiglioni, Anna Ingólfssdóttir and Bas Luttik. In search of lost time: Axiomatizing parallel composition in process algebras (invited paper). *Proc. of 36th ACM/IEEE Annual Symposium on Logic in Computer Science, LICS 2021*, pp. 1-14, IEEE, 2021.
3. Luca Aceto, Duncan Paul Attard, Adrian Francalanza and Anna Ingólfssdóttir. On Benchmarking for Concurrent Runtime Verification. *Proc. of 24th Int. Conf. on Fundamental Approaches to Software Engineering, FASE 2021 (Luxembourg, Mar./Apr. 2021)*, v. 12649 of *Lect. Notes in Comput. Sci.*, pp. 3-23, Springer, 2021.
4. Luca Aceto, Ian Cassar, Adrian Francalanza and Anna Ingólfssdóttir. On bidirectional enforcement. In Kirstin Peters and Tim Willemse, eds., *Proc. of 41st Int. Conf. on Formal Techniques for Distributed Objects, Components, and Systems, FORTE 2021*, v. 12719 of *Lect. Notes in Comput. Sci.*, pp. 3-21, Springer, 2021.
5. Luca Aceto, Valentina Castiglioni, Wan Fokkink, Anna Ingólfssdóttir and Bas Luttik. Are two binary operators necessary to finitely axiomatise parallel composition? In Christel Baier, Jean Goubault-Larrecq, eds., *Proc. of 29th EACSL Ann. Conf. on Computer Science Logic, CSL 2021 (Ljubljana, Jan. 2021)*, v. 183 of *Leibniz Int. Proc. in Inform.*, pp. 8:1-8:17. Dagstuhl Publishing, 2021. <https://doi.org/10.4230/lipics.csl.2021.8>
6. Luca Aceto and Anna Ingólfssdóttir. Introducing Formal Methods to First-Year Students in Three Intensive Weeks. *Proceedings of FMTea 2021, Formal Methods Teaching Workshop and Tutorial, Lecture Notes in Computer Science 13122*, pp. 1-17, Springer 2021.
7. Antonis Achilleos and Mathias R. Pedersen. Axiomatizations and Computability of Weighted Monadic Second-Order Logic. In *Proc. of 36th ACM/IEEE Ann. Symp. on Logic in Computer Science, LICS 2021*, 1-13, IEEE, 2021.
<https://doi.ieeecomputersociety.org/10.1109/LICS52264.2021.9470615>
8. Nathanael Arkor and Dylan McDermott. Abstract clones for abstract syntax. In Naoki Kobayashi, ed., *Proc. of 6th Int. Conf. on Formal Structures for Computation and Deduction (Buenos Aires, July 2021)*, v. 195 of *Leibniz Int. Conf. Proc. in Inform.*, pp. 30:1-30:19. Dagstuhl Publishing, 2021. <https://doi.org/10.4230/lipics.fscd.2021.30>

9. Ívar Marrow Arnþórsson, Steven Chaplick, Jökull Snær Gylfason, Magnús M. Halldórsson, Jökull Máni Reynisson, Tigran Tonoyan. Generalized Disk Graphs. In WADS: 115-128, August 2021.
10. Duncan Paul Attard, Luca Aceto, Antonis Achilleos, Adrian Francalanza, Anna Ingólfssdóttir, Karoliina Lehtinen. Better Late Than Never or: Verifying Asynchronous Components at Runtime. In Kirstin Peters and Tim Willemse, eds., Proc. of 41st Int. Conf. on Formal Techniques for Distributed Objects, Components, and Systems, FORTE 2021, Lecture Notes in Computer Science 12719, pp. 207-225, Springer 2021.
11. Giovanni Bacci, Anna Ingólfssdóttir, Kim G. Larsen, Raphaël Reynouard. Active Learning of Markov Decision Processes using Baum-Welch algorithm. Proceedings of ICMLA 2021 (International Conference on Machine Learning and Applications), IEEE, 2021.
12. Valentina Castiglioni, Michele Loreti and Simone Tini. How Adaptive and Reliable is your Program? In Kirstin Peters and Tim Willemse, eds., Proc. of 41st Int. Conf. on Formal Techniques for Distributed Objects, Components, and Systems, FORTE 2021, Lect. Notes in Comput. Sci. 12719, pp. 60-79, Springer, 2021.
13. Marek Cygan, Magnús M. Halldórsson, Guy Kortsarz. Tight Bounds on Subexponential Time Approximation of Set Cover and Related Problems. In WAOA, September 2020, Springer LNCS, June 2021.
14. Magnús M. Halldórsson, Alexandre Nolin. Superfast Coloring in CONGEST via Efficient ColorSampling. In SIROCCO 2021, Lect. Notes in Comput. Sci., Springer.
15. Magnús M. Halldórsson, Fabian Kuhn, Yannic Maus, Tigran Tonoyan. Efficient randomized distributed coloring in CONGEST. STOC 2021.
16. Dylan McDermott, Exequiel Rivas, Tarmo Uustalu. Sweedler theory of monads. In Patricia Bouyer, Lutz Schröder, eds., Proc. of 25th Int. Conf. on Foundations of Software Science and Computation Structures, FoSSaCS 2022 (Munich, Apr. 2022), Lect. Notes in Comput. Sci., Springer, to appear.
17. Tarmo Uustalu, Niccolò Veltri, Cheng-Syuan Wan. Proof theory of skew non-commutative MILL. In Andrzej Indrzejczak, Michał Zawidzki, eds., Proc. of 10th Int. Conf. on Non-classical Logics: Theory and Applications, NCL '22 (Łódź, March 2022), Electron. Proc. in Theor. Comput. Sci., Open Publishing Assoc., to appear.
18. Tarmo Uustalu, Niccolò Veltri, Noam Zeilberger. Deductive systems and coherence for skew prounital closed categories. In Claudio Sacerdoti Coen, Alwen Tiu, eds., Proc. of 15th Int. Wksh. on Logical Frameworks and Metalanguages: Theory and Practice, LFMTTP 2020 (Paris, June 2020), v. 332 of Electron. Proc. in Theor. Comput. Sci., pp. 35-53. Open Publishing Assoc., 2021. <https://doi.org/10.4204/eptcs.332.3>
19. Tarmo Uustalu, Niccolò Veltri, Noam Zeilberger. Proof theory of partially normal skew monoidal categories. In David I. Spivak, Jamie Vicary, eds., Proc. of 3rd Applied Category Theory Conf., ACT 2020 (Cambridge, MA, July 2020), v. 333 of Electron. Proc. in Theor. Comput. Sci., Open Publishing Assoc., pp. 230-246. Open Publishing Assoc., 2021. <https://doi.org/10.4204/eptcs.333.16>