

5th International Conference on Formal Structures for Computation and Deduction

FSCD 2020, June 29–July 6, 2020,
Paris, France (Virtual Conference)

Edited by
Zena M. Ariola



Editors

Zena M. Ariola

University of Oregon, Eugene, Oregon, USA
ariola@cs.uoregon.edu

ACM Classification 2012

Theory of computation → Models of computation; Theory of computation → Formal languages and automata theory; Theory of computation → Logic; Theory of computation → Semantics and reasoning; Software and its engineering → Language features; Software and its engineering → Formal language definitions; Software and its engineering → Formal methods

ISBN 978-3-95977-155-9

PRINT ISBN: 978-1-7138-1474-0

Published online and open access by

Schloss Dagstuhl – Leibniz-Zentrum für Informatik GmbH, Dagstuhl Publishing, Saarbrücken/Wadern, Germany. Online available at <https://www.dagstuhl.de/dagpub/978-3-95977-155-9>.

Publication date

June, 2020

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <https://portal.dnb.de>.

License

This work is licensed under a Creative Commons Attribution 3.0 Unported license (CC-BY 3.0):
<https://creativecommons.org/licenses/by/3.0/legalcode>.



In brief, this license authorizes each and everybody to share (to copy, distribute and transmit) the work under the following conditions, without impairing or restricting the authors' moral rights:

- Attribution: The work must be attributed to its authors.

The copyright is retained by the corresponding authors.

Digital Object Identifier: 10.4230/LIPIcs.FSCD.2020.0

ISBN 978-3-95977-155-9

ISSN 1868-8969

<https://www.dagstuhl.de/lipics>

■ Contents

Preface	
<i>Zena M. Ariola</i>	0:ix–0:x
Steering Committee	
.....	0:xi
Program Committee	
.....	0:xiii
External Reviewers	
.....	0:xv
Authors	
.....	0:xvii–0:xix

Invited Talks

Solvability in a Probabilistic Setting	
<i>Simona Ronchi Della Rocca, Ugo Dal Lago, and Claudia Faggian</i>	1:1–1:17
A Modal Analysis of Metaprogramming, Revisited	
<i>Brigitte Pientka</i>	2:1–2:3
Quotients in Dependent Type Theory	
<i>Andrew M. Pitts</i>	3:1–3:2
Certifying the Weighted Path Order	
<i>René Thiemann, Jonas Schöpf, Christian Sternagel, and Akihisa Yamada</i>	4:1–4:20

Regular Papers

Efficient Full Higher-Order Unification	
<i>Petar Vukmirović, Alexander Bentkamp, and Visa Nummelin</i>	5:1–5:17
Comprehension and Quotient Structures in the Language of 2-Categories	
<i>Paul-André Melliès and Nicolas Rolland</i>	6:1–6:18
A Complete Normal-Form Bisimilarity for Algebraic Effects and Handlers	
<i>Dariusz Biernacki, Sergueï Lenglet, and Piotr Polesiuk</i>	7:1–7:22
Pomsets with Boxes: Protection, Separation, and Locality in Concurrent Kleene Algebra	
<i>Paul Brunet and David Pym</i>	8:1–8:16
Undecidability of Semi-Unification on a Napkin	
<i>Andrej Dudenhefner</i>	9:1–9:16
Conditional Bisimilarity for Reactive Systems	
<i>Mathias Hülsbusch, Barbara König, Sebastian Küpper, and Lars Stoltenow</i>	10:1–10:19

5th International Conference on Formal Structures for Computation and Deduction (FSCD 2020).

Editor: Zena M. Ariola



Leibniz International Proceedings in Informatics
LIPICs Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

A Fast Decision Procedure For Uniqueness of Normal Forms w.r.t. Conversion of Shallow Term Rewriting Systems <i>Masaomi Yamaguchi and Takahito Aoto</i>	11:1–11:23
Modules over Monads and Operational Semantics <i>André Hirschowitz, Tom Hirschowitz, and Ambroise Lafont</i>	12:1–12:23
Type Safety of Rewrite Rules in Dependent Types <i>Frédéric Blanqui</i>	13:1–13:14
Refining Constructive Hybrid Games <i>Brandon Bohrer and André Platzer</i>	14:1–14:19
Data-Flow Analyses as Effects and Graded Monads <i>Andrej Ivašković, Alan Mycroft, and Dominic Orchard</i>	15:1–15:23
A Profunctorial Scott Semantics <i>Zeinab Galal</i>	16:1–16:18
String Diagrams for Optics <i>Guillaume Boisseau</i>	17:1–17:18
A Reflection on Continuation-Composing Style <i>Dariusz Biernacki, Mateusz Pyzik, and Filip Sieczkowski</i>	18:1–18:17
A Probabilistic Higher-Order Fixpoint Logic <i>Yo Mitani, Naoki Kobayashi, and Takeshi Tsukada</i>	19:1–19:22
Adaptive Non-Linear Pattern Matching Automata <i>Rick Erkens and Maurice Laveaux</i>	20:1–20:21
On Average-Case Hardness of Higher-Order Model Checking <i>Yoshiki Nakamura, Kazuyuki Asada, Naoki Kobayashi, Ryoma Sin'ya, and Takeshi Tsukada</i>	21:1–21:23
Size-Preserving Translations from Order- $(n + 1)$ Word Grammars to Order- n Tree Grammars <i>Kazuyuki Asada and Naoki Kobayashi</i>	22:1–22:22
A Syntax for Mutual Inductive Families <i>Ambrus Kaposi and Jakob von Raumer</i>	23:1–23:21
Towards Constructive Hybrid Semantics <i>Tim Lukas Diezel and Sergey Goncharov</i>	24:1–24:19
A Gentzen-Style Monadic Translation of Gödel's System T <i>Chuangjie Xu</i>	25:1–25:17
Unital Anti-Unification: Type and Algorithms <i>David M. Cerna and Temur Kutsia</i>	26:1–26:20
Symbolic Execution Game Semantics <i>Yu-Yang Lin and Nikos Tzevelekos</i>	27:1–27:24
Strongly Normalizing Higher-Order Relational Queries <i>Wilmer Ricciotti and James Cheney</i>	28:1–28:22

Semi-Axiomatic Sequent Calculus <i>Henry DeYoung, Frank Pfenning, and Klaas Pruiksma</i>	29:1–29:22
Constraint Solving over Multiple Similarity Relations <i>Besik Dundua, Temur Kutsia, Mircea Marin, and Cleopatra Pau</i>	30:1–30:19
Encoding Agda Programs Using Rewriting <i>Guillaume Genestier</i>	31:1–31:17
The Difference λ -Calculus: A Language for Difference Categories <i>Mario Alvarez-Picallo and C.-H. Luke Ong</i>	32:1–32:21

System Descriptions

Rast: Resource-Aware Session Types with Arithmetic Refinements <i>Ankush Das and Frank Pfenning</i>	33:1–33:17
Hierarchy Builder: Algebraic hierarchies Made Easy in Coq with Elpi <i>Cyril Cohen, Kazuhiko Sakaguchi, and Enrico Tassi</i>	34:1–34:21
The New Rewriting Engine of Dedukti <i>Gabriel Hondet and Frédéric Blanqui</i>	35:1–35:16
WANDA – a Higher Order Termination Tool <i>Cynthia Kop</i>	36:1–36:19
A Type Checker for a Logical Framework with Union and Intersection Types <i>Claude Stolze and Luigi Liquori</i>	37:1–37:24