

# Contents

## Types

Comprehensive Parametric Polymorphism: Categorical Models and Type Theory . . . . .	3
<i>Neil Ghani, Fredrik Nordvall Forsberg, and Alex Simpson</i>	
Guarded Dependent Type Theory with Coinductive Types . . . . .	20
<i>Aleš Bizjak, Hans Bugge Grathwohl, Ranald Clouston, Rasmus E. Møgelberg, and Lars Birkedal</i>	
Dependent Types and Fibred Computational Effects . . . . .	36
<i>Danel Ahman, Neil Ghani, and Gordon D. Plotkin</i>	
Game Semantics for Bounded Polymorphism . . . . .	55
<i>James Laird</i>	

## Recursion and Fixed-Points

Join Inverse Categories as Models of Reversible Recursion . . . . .	73
<i>Holger Bock Axelsen and Robin Kaarsgaard</i>	
A Coalgebraic View of Bar Recursion and Bar Induction. . . . .	91
<i>Venanzio Capretta and Tarmo Uustalu</i>	
A New Foundation for Finitary Corecursion: The Locally Finite Fixpoint and Its Properties . . . . .	107
<i>Stefan Milius, Dirk Pattinson, and Thorsten Wißmann</i>	
Fixed-Point Elimination in the Intuitionistic Propositional Calculus . . . . .	126
<i>Silvio Ghilardi, Maria João Gouveia, and Luigi Santocanale</i>	

## Verification and Program Analysis

A Theory of Monitors: (Extended Abstract) . . . . .	145
<i>Adrian Francalanza</i>	
Contextual Approximation and Higher-Order Procedures . . . . .	162
<i>Ranko Lazić and Andrzej S. Murawski</i>	
A Theory of Slicing for Probabilistic Control Flow Graphs . . . . .	180
<i>Torben Amtoft and Anindya Banerjee</i>	

Verification of Parameterized Communicating Automata via Split-Width . . . . 197  
*Marie Fortin and Paul Gastin*

**Automata, Logic, Games**

Robust Equilibria in Mean-Payoff Games. . . . . 217  
*Romain Brenguier*

Quantifier Alternation for Infinite Words . . . . . 234  
*Théo Pierron, Thomas Place, and Marc Zeitoun*

Synchronizing Automata over Nested Words . . . . . 252  
*Dmitry Chistikov, Pavel Martyugin, and Mahsa Shirmohammadi*

On Freeze LTL with Ordered Attributes. . . . . 269  
*Normann Decker and Daniel Thoma*

Regular Transformations of Data Words Through Origin Information . . . . . 285  
*Antoine Durand-Gasselín and Peter Habermehl*

**Probabilistic and Timed Systems**

Trace Refinement in Labelled Markov Decision Processes . . . . . 303  
*Nathanaël Fijalkow, Stefan Kiefer, and Mahsa Shirmohammadi*

Qualitative Analysis of VASS-Induced MDPs. . . . . 319  
*Parosh Aziz Abdulla, Radu Ciobanu, Richard Mayr, Arnaud Sangnier, and Jeremy Sproston*

Metric Temporal Logic with Counting. . . . . 335  
*Shankara Narayanan Krishna, Khushraj Madnani, and Paritosh K. Pandya*

Distributed Synthesis in Continuous Time . . . . . 353  
*Holger Hermanns, Jan Krčál, and Steen Vester*

**Proof Theory and Lambda Calculus**

Unary Resolution: Characterizing  $P_{TIME}$ . . . . . 373  
*Clément Aubert, Marc Bagnol, and Thomas Seiller*

Focused and Synthetic Nested Sequents. . . . . 390  
*Kaustuv Chaudhuri, Sonia Marin, and Lutz Straßburger*

Strong Normalizability as a Finiteness Structure via the Taylor Expansion of  $\lambda$ -terms . . . . . 408  
*Michele Pagani, Christine Tasson, and Lionel Vaux*

Reasoning About Call-by-need by Means of Types . . . . .	424
<i>Delia Kesner</i>	
<b>Algorithms for Infinite Systems</b>	
Coverability Trees for Petri Nets with Unordered Data. . . . .	445
<i>Piotr Hofman, Sławomir Lasota, Ranko Lazić, Jérôme Leroux, Sylvain Schmitz, and Patrick Totzke</i>	
Shortest Paths in One-Counter Systems . . . . .	462
<i>Dmitry Chistikov, Wojciech Czerwiński, Piotr Hofman, Michał Pilipczuk, and Michael Wehar</i>	
The Invariance Problem for Matrix Semigroups . . . . .	479
<i>Klaus Dräger</i>	
Order-Sorted Rewriting and Congruence Closure . . . . .	493
<i>José Meseguer</i>	
<b>Monads</b>	
Towards a Formal Theory of Graded Monads. . . . .	513
<i>Soichiro Fujii, Shin-ya Katsumata, and Paul-André Melliès</i>	
Profinite Monads, Profinite Equations, and Reiterman’s Theorem . . . . .	531
<i>Liang-Ting Chen, Jiří Adámek, Stefan Milius, and Henning Urbat</i>	
<b>Author Index</b> . . . . .	549



<http://www.springer.com/978-3-662-49629-9>

Foundations of Software Science and Computation  
Structures

19th International Conference, FOSSACS 2016, Held as  
Part of the European Joint Conferences on Theory and  
Practice of Software, ETAPS 2016, Eindhoven, The  
Netherlands, April 2-8, 2016, Proceedings

Jacobs, B.; Löding, C. (Eds.)

2016, XI, 550 p. 78 illus., Softcover

ISBN: 978-3-662-49629-9