

# PRELIMINARY CALL FOR PAPERS

First International Conference on

## Formal Structures for Computation and Deduction (FSCD'16)

22 June – 26 June 2016, Porto, Portugal

<http://fscd2016.dcc.fc.up.pt/>

### PROGRAMME CHAIRS

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### CONFERENCE CHAIR

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### IMPORTANT DATES

**Abstract Deadline:** 29 January 2016      **Rebuttal:** 21 – 23 March 2016  
**Submission Deadline:** 5 February 2016      **Notification:** 6 April 2016

**PUBLICATION** The proceedings will be published as an electronic volume in the Leibniz International Proceedings in Informatics (LIPIcs) of Schloss Dagstuhl. All LIPIcs proceedings are open access.

**SUBMISSION GUIDELINES** Information about how to submit a paper can be found at: <http://fscd2016.dcc.fc.up.pt/>

**FSCD STEERING COMMITTEE** T. Altenkirch (Univ. Nottingham), G. Dowek, (INRIA), S. Escobar (Univ. Politécnic de Valencia), M. Fernández (King's College London), M. Hasegawa (Univ. Kyoto), H. Herbelin (INRIA), N. Hirokawa (JAIST), L. Ong (Chair, Univ. Oxford), J. Palsberg (UCLA), K. Rose (Two Sigma Investments), R. Thiemann (Univ. Innsbruck), P. Urzyczyn (Univ. Warsaw), F. van Raamsdonk (VU Univ. Amsterdam).

FSCD (<http://fscdconference.org/>) covers all aspects of formal structures for computation and deduction from theoretical foundations to applications. Building on two communities, RTA (Rewriting Techniques and Applications) and TLCA (Typed Lambda Calculi and Applications), FSCD embraces their core topics and broadens their scope to closely related areas in logics, proof theory and new emerging models of computation such as quantum computing or homotopy type theory. The name of the new conference comes from an unpublished but important book by Gérard Huet that strongly influenced many research in the domain.

Suggested, but not exclusive, list of topics for submission are:

1. Calculi • Lambda calculus • Logics (first-order, higher-order, equational, modal, linear, classical, constructive, etc.) • Rewriting systems (string, term, higher-order, graph, conditional, modulo, infinitary, etc.) • Proof theory (natural deduction, sequent calculus, proof nets, etc.) • Type theory and logical frameworks • Homotopy type theory
2. Methods in Computation and Deduction • Type systems (polymorphism, dependent, recursive, intersection, session, etc.) • Induction, coinduction • Matching, unification, completion, orderings • Strategies (normalization, completeness, etc.) • Tree automata • Model building and model checking • Proof search (resolution, paramodulation, narrowing, tableaux, focusing, etc.) • Constraint solving and decision procedures
3. Semantics • Operational semantics and abstract machines • Game Semantics and applications • Domain theory and categorical models • Quantitative models (timing, probabilities, resources, etc.) • Quantum computation and emerging models in computation
4. Algorithmic Analysis and Transformations of Formal Systems • Type Inference and type checking • Abstract Interpretation • Complexity analysis and implicit computational complexity • Checking termination, confluence, derivational complexity and related properties • Symbolic computation
5. Tools and Applications • Programming and proof environments (proof assistants, automated theorem prover, proof checkers, specialized provers, dependently typed languages, etc.) • Verification tools (abstract interpretation, termination, confluence, specialized provers, etc.) • Libraries for proof assistants and interactive theorem provers (support for variable bindings, nominal, polynomial, equality, etc.) • Case studies in proof assistants and interactive theorem provers (formalizations, mechanizations, certifications) • Certifications (theorems, rewriting techniques, etc.) • Applications of formal systems inside and outside of CS (biology, linguistics, physics, education, etc.)