

# 24th International Conference on Types for Proofs and Programs

TYPES 2018, June 18–21, 2018, Braga, Portugal

Edited by

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## ■ Preface

This volume is the post-proceedings of the 24th International Conference on Types for Proofs and Programs, TYPES 2018, which was held at Universidade do Minho in Braga, Portugal, between the 18th and the 21st of June in 2018.

The TYPES meetings are a forum to present new and on-going work in all aspects of type theory and its applications, especially in formalized and computer assisted reasoning and computer programming. The meetings from 1990 to 2008 were annual workshops of a sequence of five EU funded networking projects. Since 2009, TYPES has been run as an independent conference series. Prior to the 2018 meeting in Braga, TYPES meetings took place in Antibes (1990), Edinburgh (1991), Båstad (1992), Nijmegen (1993), Båstad (1994), Torino (1995), Aussois (1996), Kloster Irsee (1998), Lökeberg (1999), Durham (2000), Bergen en Dal near Nijmegen (2002), Torino (2003), Jouy-en-Josas near Paris (2004), Nottingham (2006), Cividale del Friuli (2007), Torino (2008), Aussois (2009), Warsaw (2010), Bergen (2011), Toulouse (2013), Paris (2014), Tallinn (2015), Novi Sad (2016), and Budapest (2017) with post-proceedings published in various outlets, with the last six in LIPIcs.

The TYPES areas of interest include, but are not limited to: foundations of type theory and constructive mathematics; applications of type theory; dependently typed programming; industrial uses of type theory technology; meta-theoretic studies of type systems; proof assistants and proof technology; automation in computer-assisted reasoning; links between type theory and functional programming; formalizing mathematics using type theory.

The TYPES conferences are traditionally of an open and informal character. Selection of talks for presentation at the conference is based on short abstracts – reporting on work in progress or work presented or published elsewhere is welcome. A formal, fully reviewed post-proceedings volume of unpublished work is prepared after the conference. The programme of TYPES 2018 included four invited talks by Cédric Fournet (Microsoft Research, UK) on Building Verified Cryptographic Components Using F\*, Delia Kesner (IRIF CNRS and Université Paris-Diderot, France) on Multi Types for Higher-Order Languages, Matthieu Sozeau (INRIA, France) on The Predicative, Polymorphic Calculus of Cumulative Inductive Constructions and its Implementation, and Josef Urban (CIIRC, Czech Republic) on Machine Learning for Proof Automation and Formalization. The contributed part of the programme consisted of 42 talks. One of the sessions of the programme paid tribute to Martin Hofmann, and included three of the contributed talks, and an invited talk by Ralph Matthes (CNRS, IRIT, University of Toulouse, France). The conference was attended by more than 80 researchers.

TYPES 2018 was sponsored by the COST Action CA15123 EUTypes, supported by COST (European Cooperation in Science and Technology), Centro de Matemática da Universidade do Minho, Conselho Cultural da Universidade do Minho, and Câmara Municipal de Braga. The call for contributions to the post-proceedings of TYPES 2018 was open and not restricted to the authors and presentations of the conference. Out of 8 submitted papers, 7 were selected after several rounds of refereeing; the final decisions were made by the editors. The papers span a wide range of interesting topics: Bishop’s set theory; meta-theory of logics and type systems and its formalisation; models of cubical type theory; normalization by evaluation; non-strictly positive data types; program verification; semantic subtyping. We thank both the authors and the reviewers for their hard work.

Peter Dybjer, José Espírito Santo, and Luís Pinto  
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