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# **Automated Reasoning in Quantified Non-Classical Logics**

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## Preface

This volume contains the proceedings of the Third International Workshop on Automated Reasoning in Quantified Non-Classical Logics (ARQNL 2018), held July 18th, 2018, in Oxford, United Kingdom. The workshop was affiliated and co-located with the International Joint Conference on Automated Reasoning (IJCAR 2018), which was part of the Federated Logic Conference (FLoC 2018). The aim of the ARQNL 2018 Workshop has been to foster the development of proof calculi, automated theorem proving (ATP) systems and model finders for all sorts of quantified non-classical logics. The ARQNL workshop series provides a forum for researchers to present and discuss recent developments in this area.

Non-classical logics — such as modal logics, conditional logics, intuitionistic logic, description logics, temporal logics, linear logic, multivalued logic, dynamic logic, deontic logic, fuzzy logic, paraconsistent logic, relevance logic, free logic, natural logic — have many applications in AI, Computer Science, Philosophy, Linguistics, and Mathematics. Hence, the automation of proof search in these logics is a crucial task. For many propositional non-classical logics there exist proof calculi and ATP systems. But proof search is significantly more difficult than in classical logic. For first-order and higher-order non-classical logics the mechanization and automation of proof search is even more difficult. Furthermore, extending existing non-classical propositional calculi, proof techniques and implementations to quantified logics is often not straightforward. As a result, for most quantified non-classical logics there exist no or only few (efficient) ATP systems. It is in particular the aim of the ARQNL workshop series to initiate and foster practical implementations and evaluations of such ATP systems for non-classical logics.

The ARQNL 2018 Workshop received eight paper submissions. Each paper was reviewed by at least three referees, and following an online discussion, six research papers were selected to be included in the proceedings. The ARQNL 2018 Workshop also included invited talks by Larry Moss and Giles Reger. Additionally, one research paper was selected for presentation at the workshop.

We would like to sincerely thank the invited speakers and all authors for their contributions. We would also like to thank the members of the Program Committee of ARQNL 2018 for their professional work in the review process. Furthermore, we would like to thank the IJCAR Workshop Chair Alberto Griggio and the Organizing Committee of FLoC 2018. Finally, many thanks to all active participants of the ARQNL 2018 Workshop.

Luxembourg and Oslo, July 2018

Christoph Benzmüller  
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## Contents

Implementations of Natural Logics <i>Lawrence S. Moss</i>	1–10
Some Thoughts About FOL-Translations in Vampire <i>Giles Reger</i>	11–25
Pseudo-Propositional Logic <i>Ahmad-Saher Azizi-Sultan</i>	26–33
A Simple Semi-automated Proof Assistant for First-order Modal Logics <i>Tomer Libal</i>	34–48
Labelled Connection-based Proof Search for Multiplicative Intuitionistic Linear Logic <i>Didier Galmiche and Daniel Méry</i>	49–63
Labelled Calculi for Quantified Modal Logics with Non-rigid and Non-denoting Terms <i>Eugenio Orlandelli and Giovanna Corsi</i>	64–78
System Demonstration: The Higher-Order Prover Leo-III <i>Alexander Steen and Christoph Benzmüller</i>	79–85
Evidence Extraction from Parameterised Boolean Equation Systems <i>Wieger Wesselink and Tim A.C. Willemse</i>	86–100