THE BULLETIN OF SYMBOLIC LOGIC



Edited by

Laurent Bienvenu, *Managing Editor*Matthias Baaz Ali Enayat

James Cummings Leonid Libkin

Paola D'Aquino Øystein Linnebo

Peter Dybjer

Reviews Editors

Clinton Conley, Managing Editor for Reviews
Mark van Atten Bernard Linsky
Benno van den Berg Antonio Montalbán
Thomas Colcombet Rahim Moosa
Samuel Coskey Christian Retoré

Bradd Hart Nam Trang

Thesis Abstracts Editor

Christian Rosendal

VOLUME 27 · NUMBER 2 · JUNE 2021 · ISSN 1079-8986

Copyright © 2021 by the Association for Symbolic Logic. All rights reserved.

Reproduction by photostat, photo-print, microfilm, or like process by permission only.

The BULLETIN, the JOURNAL and the REVIEW OF SYMBOLIC LOGIC are the official organs of the Association for Symbolic Logic, an international organization for furthering research in logic and the exchange of ideas among mathematicians, computer scientists, linguists, and others interested in this field. The BULLETIN encourages submissions of *Articles* and *Communications* in all areas of logic, including mathematical or philosophical logic, logic in computer science or linguistics, the history or philosophy of logic, and applications of logic to other fields. It also encourages the submissions of abstracts for doctoral level theses in logic. The BULLETIN also publishes reviews of publications in logic.

Editors

Laurent Bienvenu (Managing Editor), CNRS & Université de Bordeaux, LaBRI, 351 cours de la Libération, 33405 Talence, France

laurent.bienvenu@computabilitv.fr

Matthias Baaz, Institute for Discrete Mathematics and Geometry, Vienna University of Technology, Weidner hauptstrasse 8-10, 1040 Vienna, Austria

baaz@logic.at

James Cummings, Department of Mathematical Sciences, Carnegie Mellon University, Wean Hall 6113, Pittsburgh, PA 15213, USA

jcumming@andrew.cmu.edu

Paola D'Aquino, Department of Mathematics and Physics, Universita' della Campania "L. Vanvitelli", viale Lincoln 5, Caserta 81100, Italy

paola.daquino@unia2.it

Peter Dybjer, Department of Computer Science and Engineering, Chalmers University of Technology, SE 412 96 Göteborg, Sweden

peterd@chalmers.se

Ali Enayat, Department of Philosophy, Linguistics, and Theory of Science, University of Gothenburg, Box 200, SE 405 30, Gothenburg, Sweden

ali.enayat@qu.se

Leonid Libkin, Laboratory for Foundations of Computer Science, University of Edinburgh, Informatics Forum, IF 5.33, Crichton Street, Edinburgh, EH8 9AB, UK

libkin@inf.ed.ac.uk

Øystein Linnebo, Department of Philosophy, IFIKK, 0315 Oslo, Norway

oystein.linnebo@ifikk.uio.no

Reviews editors

Clinton Conley (Managing Editor), Department of Mathematical Sciences, Carnegie Mellon

University, Pittsburgh, PA 15213, USA, clintonc@andrew.cmu.edu

Mark van Atten mark.vanatten@univ-paris1.fr,

Benno van den Berg bennovdberg@gmail.com,

Thomas Colcombet thomas.colcombet@liafa.univ-paris-diderot.fr,

Samuel Coskey scoskey@boisestate.edu,

Bradd Hart hartb@mcmaster.ca,

Bernard Linsky bernard.linsky@ualberta.ca, Antonio Montalbán antonio@math.berkeley.edu, Rahim Moosa rmoosa@uwaterloo.ca, Christian Retoré christian.retore@lirmm.fr, and Nam Trang namtrang35@gmail.com.

Thesis abstracts editor

Christian Rosendal rosendal@math.uic.edu

Articles present topics of broad interest in a way that is accessible to a large audience. They can be purely expository, survey, or historical articles or they may contain, in addition, new ideas or results or new approaches to old ones.

Communications should be announcements of important new results and ideas in any aspect of logic; they may be short papers in their final form or preliminary announcements (extended abstracts, position papers) of longer, full papers that will be published elsewhere. In any case, they should include, in addition to a description of the new results or ideas, enough history, background, and explanation to make the significance of the work apparent to a wide audience. Communications will be quickly refereed and published within six months of the submission of final version.

To submit *Articles* or *Communications* please follow the procedure described at http://www.aslonline.org/journals-bulletin-guide.html

To submit *Thesis Abstracts* please follow the procedure described at http://aslonline.org/LogicThesis Abstracts.html

Books for review in the BULLETIN should be sent to ASL, Department of Mathematics, University of Connecticut, 341 Mansfield Road, U-1009, Storrs, CT 06269-1009, USA.

TABLE OF CONTENTS

Articles	
Current research on Gödel's incompleteness theorems by Yong Cheng	
Goodstein sequences based on a parametrized Ackermann–Péter function by Toshiyasu Arai, Stanley S. Wainer, and Andreas Weiermann	
The McKinsey–Tarski theorem for locally compact ordered spaces	
by Guram Bezhanishvili, Nick Bezhanishvili, Joel Lucero-Bryan, and Jan van Mill	
Review	
Two articles on classification in topology	
Reviewed by Iian B. Smythe	
Thesis Abstracts	
María Inés Corbalán, From Generative Linguistics to Categorial Grammars: Overt Subjects in Control Infinitives, University of Campinas, Brazil, 2018. Supervised by Marcelo Esteban Coniglio	
Bruno Costa Coscarelli, <i>Model Theory in a Paraconsistent Environment</i> , University of Campinas, Brazil, 2020. Supervised by Marcelo Esteban Coniglio	
Christian d'Elbée, <i>Expansions and Neostability in Model Theory</i> , Institut Camille Jordan, Université deLyon, Lyon, France, 2019. Supervised by Thomas Blossier and Zóe Chatzidakis	
Bruno Jacinto, Necessitism, Contingentism, and Theory Equivalence, University of St Andrews, St Andrews, Scotland, UK (SASP PhD	
Programme), 2016. Supervised by Stephen Read and Gabriel Uzquiano 217	
Yong Liu, The Structure of d.r.e. Degrees, National University of	
Singapore, Singapore, 2017. Supervised by Yue Yang	
Patrick Lutz, Results on Martin's Conjecture, University of California,	
Berkeley, CA, USA, 2021. Supervised by Theodore Slaman	
Justin Miller, <i>Intrinsic density, asymptotic computability, and stochasticity</i> , University of Notre Dame, Notre Dame, IN, USA, 2021.	
Supervised by Peter Cholak	
Cheng Peng, <i>On Transfinite Levels of the Ershov Hierarchy</i> , National University of Singapore, Singapore, 2018.	
Supervised by Yue Yang	

Alejandro Poveda, Contributions to the Theory of Large Cardinals through the Method of Forcing, Doctorate program in Mathematics and	
Computer Science—Universitat de Barcelona, Barcelona, Spain,	
2020. Supervised by Joan Bagaria	221
Pierre Touchard, <i>Transfer Principles in Henselian Valued Fields</i> , Westfälische Wilhelms-Universität Münster, Germany, 2020. Supervised by Martin Hils.	222
Tingxiang Zou, <i>Pseudofinite Structures and Counting Dimensions</i> , Université de Lyon, Lyon, France, 2019. Supervised by	
Frank Wagner	223
Notices	224