

THE BULLETIN OF SYMBOLIC LOGIC

Edited by

James Cummings, *Managing Editor*

Guram Bezhanishvili Ali Enayat

Katalin Bimbó Øystein Linnebo

Paola D'Aquino Anca Muscholl

Peter Dybjer Arno Pauly

Reviews Editors

Graham Leach-Krouse, *Managing Editor for Reviews*

Albert Atserias Dugald Macpherson

Mark van Atten Antonio Montalbán

Benno van den Berg Christian Retoré

Clinton Conley Marion Scheepers

Bradd Hart Nam Trang

Thesis Abstracts Editor

Christian Rosendal

VOLUME 28 • NUMBER 3 • SEPTEMBER 2022 • ISSN 1079-8986

Copyright © 2022 by the Association for Symbolic Logic. All rights reserved.
Reproduction by photostat, photo-print, microfilm, or like process by permission only.



PUBLISHED BY CAMBRIDGE UNIVERSITY PRESS FOR
AND ON BEHALF OF THE ASSOCIATION OF SYMBOLIC LOGIC.

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

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

jcumming@andrew.cmu.edu

Guram Bezhanishvili, New Mexico State University, New Mexico, USA

guram@nmsu.edu

Katalin Bimbó, University of Alberta, Alberta, Canada

bimbo@ualberta.ca

Paola D'Aquino, Department of Mathematics and Physics, Università 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@gu.se

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

oystein.linnebo@ifikk.uio.no

Anca Muscholl, LaBRI, Université Bordeaux, 351 cours de la Libération, F-33405 Talence cedex, France

anca@labri.fr

Arno Pauly, Swansea University, Wales

arno.m.pauly@gmail.com

Reviews editors

Graham Leach-Krouse (Managing Editor), Kansas State University, Kansas, USA, g_leachkr@ksu.edu

Albert Atserias atserias@cs.upc.edu,

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

Benno van den Berg bennovdberg@gmail.com,

Clinton Conley clintonc@andrew.cmu.edu

Bradd Hart hartb@mcmaster.ca,

Dugald Macpherson pmthdm@maths.leeds.ac.uk,

Antonio Montalbán antonio@math.berkeley.edu,

Christian Retoré christian.retore@lirmm.fr

Marion Scheepers mscheepe@boisestate.edu, and

Nam Trang namtrang35@gmail.com.

Thesis abstracts editor

Christian Rosendal rosendal@umd.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 <https://asonline.org/journals/the-bulletin-of-symbolic-logic/the-bulletin-of-symbolic-logic-submission-guidelines>.

To submit *Thesis Abstracts* please follow the procedure described at <https://asonline.org/journals/the-bulletin-of-symbolic-logic/logic-thesis-abstracts-in-the-bulletin-of-symbolic-logic>.

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

Affine logic for constructive mathematics by MICHAEL SHULMAN	327
Universal coding and prediction on ergodic random points by ŁUKASZ DEBOWSKI AND TOMASZ STEIFER.....	387
The collapse of the Hilbert program: A variation on the Gödelian theme by SAUL A. KRIPKE	413
An axiomatic approach to forcing in a general setting by RODRIGO A. FREIRE AND PETER HOLY	427
A note on fragments of uniform reflection in second order arithmetic by EMANUELE FRITTAION.....	451

ASL MEETINGS

2022 Winter Meeting of the Association for Symbolic Logic with the AMS.....	466
2022 Winter Meeting of the Association for Symbolic Logic with the APA	467
Notices.....	470