

THE JOURNAL OF SYMBOLIC LOGIC

Edited by

Noam Greenberg, *Coordinating Editor*

Bradd Hart

Bakhadyr Khoussainov

Jan Krajčček

Stephan Kreutzer

Colin McLarty

Ya'acov Peterzil

Boban Velickovic

Andreas Weiermann

Philip Welch

VOLUME 80 • NUMBER 1 • MARCH 2015 • ISSN 0022-4812

Copyright © 2015 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 FOR 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 JOURNAL invites submission of original scholarly work in mathematical logic and its applications. Articles being submitted for publication in the JOURNAL should be sent to one (and only one) of the following editors:

Noam Greenberg (Coordinating Editor)

School of Mathematics, Statistics and Operations Research, Victoria University of Wellington, PO Box 600, Wellington 6140 New Zealand
(greenberg@msor.vuw.ac.nz);

Bradd Hart

Department of Mathematics & Statistics, McMaster University, 1280 Main Street W., Hamilton, Ontario, Canada L8S 4K1
(hartb@mcmaster.ca);

Bakhadyr Khossainov

Department of Computer Science, University of Auckland, Private Bag 92019, Auckland, New Zealand
(bmk@cs.auckland.ac.nz);

Jan Krajíček

Department of Algebra, Faculty of Mathematics and Physics, Sokolovska 83, Prague, CZ-186 75, The Czech Republic
(krajicek@karlin.mff.cuni.cz);

Stephan Kreutzer

Technische Universität Berlin, Institut für Softwaretechnik und Theoretische Informatik, Lehrstuhl für Logik und Semantik, Sekr TEL 7-3, Ernst-Reuter-Platz 7, 10587 Berlin, Germany
(stephan.kreutzer@tu-berlin.de);

Colin McLarty

Department of Philosophy, Case Western Reserve University, Clark Hall, 11130 Bellflower Road, Cleveland, OH 44106-7719
(colin.mclarty@case.edu);

Ya'acov Peterzil

Department of Mathematics, University of Haifa, Mount Carmel, Haifa, 31905, Israel
(kobi@math.haifa.ac.il);

Boban Velickovic

Équipe de Logique Mathématique, Université Paris Diderot – Paris 7, UFR de Mathématiques (case 7012), 2 place Jussieu 75251 Paris, France
(boban@math.univ-paris-diderot.fr);

Andreas Weiermann

Vakgroep Wiskunde, Ghent University, Krijgslaan 281 – Gebouw S22, B9000 Gent, Belgium
(Andreas.Weiermann@UGent.be);

Philip Welch

School of Mathematics, University of Bristol, Clifton, Bristol, BS8 1TW, UK
(P.Welch@bristol.ac.uk).

The editors prefer electronic submissions. The preferred formats for electronic submissions are PDF or Postscript but other formats such as Word documents will be accommodated as best as possible. The author should keep a complete copy of the submitted manuscript and the electronic files from which it was created. After the paper is accepted in its final form, an electronic copy will be appreciated and will advance its final publication date.

It is recommended that papers be prepared in L^AT_EX using the ASL's class file, especially for manuscripts having extensive symbolic or mathematical notation. This style file is available from the ASL's website at <http://www.aslonline.org>; links from that site provide further information about the JOURNAL and about submitting papers for publication.

No print offprints will be supplied but authors will receive a link to a freely accessible electronic pdf of their published article. Print offprints may be purchased if required.

TABLE OF CONTENTS

Bar recursion and products of selection functions, by MARTÍN ESCARDÓ and PAULO OLIVA.....	1
Structure theory of $L(\mathbb{R}, \mu)$ and its applications, by NAM TRANG	29
Set forcing and strong condensation for $H(\omega_2)$, by LIUZHEN WU.....	56
Definable henselian valuations, by FRANZISKA JAHNKE and JOCHEN KOENIGSMANN	85
Fraïssé limits of metric structures, by Itai Ben Yaacov.	100
Computability and uncountable linear orders I: computable categoricity, by NOAM GREENBERG, ASHER M. KACH, STEFFEN LEMPP, and DANIEL D. TURETSKY	116
Computability and uncountable linear orders II: degree spectra, by NOAM GREENBERG, ASHER M. KACH, STEFFEN LEMPP, and DANIEL D. TURETSKY	145
On idempotent ultrafilters in higher-order reverse mathematics, by ALEXANDER P. KREUZER.....	179
A valuation theoretic characterization of recursively saturated real closed fields, by PAOLA D’AQUINO, SALMA KUHLMANN, and KAREN LANGE.....	194
Locally constant functions in C -minimal structures, by PABLO CUBIDES KOVACSICS.....	207
Bad fields with torsion, by JUAN DIEGO CAYCEDO and MARTIN HILS.....	221
Model completeness of o-minimal fields with convex valuations, by CLIFTON F. EALY and JANA MAŘÍKOVÁ.....	234
Large cardinals and lightface definable well-orders, without the GCH, by SY-DAVID FRIEDMAN, PETER HOLY, and PHILIPP LÜCKE	251
Positional strategies in long Ehrenfeucht–Fraïssé games, by S. SHELAH, J. VÄÄNÄNEN, and B. VELIČKOVIĆ	285
Existential \emptyset -definability of henselian valuation rings, by ARNO FEHM.....	301
Generically stable regular types, by PREDRAG TANOVIĆ.....	308
A classification of 2-chains having 1-shell boundaries in rosy theories, by BYUNGHAN KIM, SUNYOUNG KIM, and JUNGUK LEE	322
A Henkin-style proof of completeness for first-order algebraizable logics, by PETR CINTULA and CARLES NOGUERA	341