## THE

## JOURNAL

OF

## SYMBOLIC LOGIC

EDITED BY<br>Robert Goldblatt, Coordinating Editor<br>Toshiyasu Arai Peter Cholak<br>Françoise Delon John Etchemendy Martin Grohe<br>Greg Hjorth Simon Thomas

Volume 69 - Number 3 • September 2004
ISSN 0022-4812

Published quarterly by the Association for Symbolic Logic, Inc. WITH SUPPORT FROM INSTITUTIONAL MEMBERS

Copyright © 2004 by the Association for Symbolic Logic. All rights reserved. Reproduction by photostat, photo-print, 'microfilm, or like process by permission only.

## TABLE OF CONTENTS

On spectra of sentences of monadic second order logic with counting, by E. Fischer and J. A. Makowsky ..... 617
Lovely pairs of models: the non first order case, by Itay Ben-YaACov ..... 641
The complexity of continuous embeddability between dendrites, by Alberto Marcone and Christian Rosendal ..... 663
On some small cardinals for Boolean algebras, by Ralph McKenzie and J. Donald Monk ..... 674
Reverse mathematics and the equivalence of definitions for well and better quasi-orders, by Peter Cholak, Alberto Marcone, and Reed Solomon. ..... 683
Every polynomial-time 1-degree collapses if and only if $\mathrm{P}=$ PSPACE, by Stephen À. Fenner, Stuart A. Kurtz, and James S. Royer ..... 713
Solovay models and forcing extensions, by Joan Bagaria and Roger Bosch ..... 742
Patterns of paradox, by Roy T. Cook ..... 767
Leibnizian models of set theory, by Ali Enayat ..... 775
On the intuitionistic strength of monotone inductive definitions, by Sergei Tupailo ..... 790
Continuum-many Boolean algebras of the form $\mathscr{P}(\omega) / \mathcal{I}, \mathcal{I}$ Borel, by Michael Ray Oliver ..... 799
Dividing in the algebra of compact operators, by Alexander Berenstein ..... 817
Wellfoundedness proofs by means of non-monotonic inductive definitions I: $\Pi_{2}^{0}$-operators, by Toshiyasu Arai ..... 830
Diophantine properties of sets definable in o-minimal structures, by A. J.
Wilkie ..... 851
On the construction of effectively random sets, by Wolfgang Merkle and Nenad Mihailović ..... 862
Filtering unification and most general unifiers in modal logic, by Silvio Ghilardi and Lorenzo Sacchetti, ..... 879
Every 2-random real is Kolmogorov random, by Joseph S. Miller ..... 907
Almost everywhere domination, by Natasha L. Dobrinen and Stephen G. Simpson ..... 914
(Continued on inside back cover)

[^0]
[^0]:    The Journal of Symbolic Logic (ISSN 0022-4812) is published quarterly, in the months of March, June, September, and December, by the Association for Symbolic Logic,. Inc.. 124 Raymond Avenue. Poughkeepsie, NY 12604-0001, USA. Periodicals postage is paid at Poughkeepsie NY and at additional mailing offices. The Journal is distributed with The Bulletin of Symbolic Logic; the 2004 annual subscription price for the two journals is $\$ 475$. Online subscription is available from Project Euclid; visit http://projecteuclid.org/jsl. Postmaster: Send address changes to The Journal of Symbolic Logic, Journals Division UIP, 1325 South Oak Street, Champaign, IL 61820-6903, USA. Business correspondence should be sent to the Secretary-Treasurer of the Association. Charles Steinhorn (address on inside back cover).

    The Bulletin and the Journal are the official organs of the Association for Symbolic Logic, an international organization for furthering research in symbolic logic and the exchange of ideas among mathematicians, philosophers, computer scientists, linguists, and others interested in this field.

    The Journal invites submission of (1) original technical papers in the field of symbolic logic. (2) expository papers in this field, (3) papers whose main point is philosophical and which either bear upon logic or make use of its methods, and (4) studies in the history of logic in which modern technical developments are taken into account.

