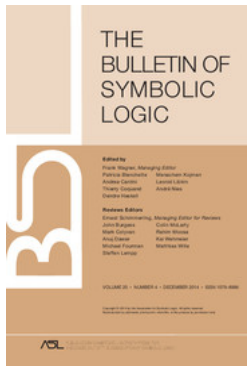

BSL volume 21 issue 1 Cover and Front matter

The Bulletin of Symbolic Logic / Volume 21 / Issue 01 / March 2015, pp f1 - f3
DOI: 10.1017/bsl.2015.8, Published online: 09 April 2015

THE BULLETIN OF SYMBOLIC LOGIC

VOLUME 21 • NUMBER 1 • MARCH 2015 • ISSN 1079-8986

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. The BULLETIN also publishes reviews of publications in logic.

Please follow the submission procedure described at

http://www.aslonline.org/journals-bulletin-guide.html

It is recommended that papers be prepared in LaTeX 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 BULLETIN 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.

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.

Books for review in the BULLETIN should be sent to **ASL, BOX 742, Vassar College, 124 Raymond Avenue, Poughkeepsie, NY 12604, USA.**

TABLE OF CONTENTS

ARTICLES

Existential-import mathematics,
by JOHN CORCORAN and HASSAN MASOUD 1
The convenience of the typesetter; notation and typography
in Frege's *Grundgesetze der Arithmetik,* by J. J. GREEN,
MARCUS ROSSBERG, and PHILIP A. EBERT 15

IN MEMORIAM

In Memoriam: Grigori E. Mints, 1939–2014 31

2014 European Summer Meeting of the Association for Symbolic Logic,
Logic Colloquium '14, Vienna, Austria, July 14–19, 2014 34
Notices 104

The Bulletin of Symbolic Logic
Volume 21, Number 1, March 2015

2014 EUROPEAN SUMMER MEETING OF THE ASSOCIATION FOR SYMBOLIC LOGIC

LOGIC COLLOQUIUM '14

Vienna, AUSTRIA
July 14–19, 2014

Logic Colloquium '14, the 2014 European Summer Meeting of the Association for Symbolic Logic, was hosted by the Vienna University of Technology (TU Wien) from July 14 to July 19, 2014. The meeting was part of the Vienna Summer of Logic, which ran from July 9 to July 24, with almost twenty logic-related conferences and numerous workshops.

Funding for the conference and the Vienna Summer of Logic was provided by: the Association for Symbolic Logic (ASL); the Kurt Gödel Society; Technische Universität Wien; Universität Wien; Institute of Science and Technology, Austria; Akademie der Bildenden Künste Wien; Stadt Wien; Austrian Airlines; Bundesminesterium für Wissenschaft, Forschung, und Wirtschaft; the University of Manchester; Catering Kultur; Vienna Convention Bureau; Artificial Intelligence (Elsevier); European Association for Computer Science Logic; and Blacklane Limousines.

The success of the meeting was due largely to the hard work of the Local Organizing Committee under the leadership of its Chair, Matthias Baaz (TU Wien), and Co-chair, Stefan Hetzl (TU Wien). The other members of the committee were Agata Ciabattoni (TU Wien), Sebastian Eberhard (Bern), and Martin Goldstern (TU Wien). In addition, the following students and post-doctoral researchers assisted in the organization: Bahareh Afshari, Gabriel Ebner, Graham Leigh, Bernhard Mallinger, Janos Tapolczai, and Sebastian Zivota (all TU Wien).

The Program Committee consisted of Zofia Adamowicz (Polish Academy of Sciences, Warsaw), Jeremy Avigad (Carnegie Mellon, Chair), Marc Bezem (Bergen), Sy Friedman (Vienna), Jochen Koenigsman (Oxford), Kamal Lodaya (Institute of Mathematical Sciences, Chennai), Paulo Oliva (Queen Mary), Ted Slaman (Berkeley), and Richard Zach (Calgary).

The program included two tutorial courses, eleven invited plenary lectures, and twenty-nine invited lectures in seven special sessions. There were 133 contributed talks and 271 registered participants. Twenty one students and recent Ph.D.'s received ASL travel grants and nineteen students received NSF travel awards under a grant to the ASL.

The following tutorial courses were given:

Krzysztof Apt: *A tutorial on strategic and extensive games*.
Alexandre Miquel: *A tutorial on classical realizability and forcing*.

The following invited plenary lectures were presented:

Andrej Bauer: *Reductions in computability theory from a constructive point of view*.
Paddy Blanchette: *The birth of semantic entailment*.
Kirsten Eisenträger: *Generalizations of Hilbert's Tenth Problem*.
Andrés Cordón Franco: *On local induction schemes*.
Vera Fischer: *Cardinal invariants and template iterations*.
Noam Greenberg: *Applications of admissible computability*.
Leszek Kołodziejczyk: *The problem of a model without collection and without exponentiation*.

1079-8986/15/2101-0004
DOI:10.1017/bsl.2015.3

We will also discuss progress on calculating the strength of $\Sigma^0_2(\Pi^1_1)$-DET, relating this to Mitchell's hierarchy of weak repeat point measures.

[1] Itay Neeman, *Unraveling Π^1_1 sets, revisited*. ***Israel Journal of Mathematics***, vol. 152 (2006), pp. 181–203.

[2] John R. Steel, *Determinacy in the Mitchell models*. ***Annals of Mathematical Logic***, vol. 22 (1982), no. 2, pp. 109–125.

▸ MATTHEW HARRISON-TRAINOR, *Degree spectra of relations on a cone*.
Logic and the Methodology of Science, University of California, Berkeley, 2440 Bancroft Way, Berkeley, CA 94720, USA.
E-mail: matthew.h-t@berkeley.edu.

We consider structures $\mathcal{A}$ with an additional relation R. We say that two relations R and S on structures $\mathcal{A}$ and $\mathcal{B}$ respectively have the same (relativised) degree spectrum if, for sets C on a cone above $\mathbf{d}$,

$$\{R^{\tilde{\mathcal{A}}} \oplus C : \tilde{\mathcal{A}} \cong \mathcal{A} \text{ and } \tilde{\mathcal{A}} \leq_T C\} = \{S^{\tilde{\mathcal{B}}} \oplus C : \tilde{\mathcal{B}} \cong \mathcal{B} \text{ and } \tilde{\mathcal{B}} \leq_T C\}.$$

Using determinacy, these degree spectra are partially ordered. Many classes of degrees which relativise, such as the Σ^0_α degrees or α-CEA degrees, are degree spectra. This is a notion which captures solely the model-theoretic properties of the relation R. We will advocate for the naturality of this viewpoint by recasting existing results in this new language, giving new results, and putting forward new questions. Existing results of Harizanov in [3] show that there are two minimal degree spectra, the computable sets and the c.e. sets. In [1] and [2], Ash and Knight considered whether Harizanov's results could be generalised. We give a partial positive answer by showing that any degree spectrum which contains a non-Δ^0_2 degree contains all of the 2-CEA degrees. We also give an example of two incomparable degree spectra.

[1] C. J. Ash and J. F. Knight, *Possible degrees in recursive copies I*. ***Annals of Pure and Applied Logic***, vol. 75 (1995), no. 3, pp. 215–221.

[2] ———, *Possible degrees in recursive copies II*. ***Annals of Pure and Applied Logic***, vol. 87 (1997), no. 2, pp. 151–165.

[3] V. S. Harizanov, *Some effects of Ash–Nerode and other decidability conditions on degree spectra*. ***Annals of Pure and Applied Logic***, vol. 55 (1991), no. 1, pp. 51–65.

▸ NADJA HEMPEL, *Around n-dependent fields*.
217 Avenue Roger Salengro, Veilleurbanne, 69100, France.
E-mail: hempel@math.univ-lyon1.fr.

The notion of n-dependent theories introduced by Shelah is a natural generalization of dependent or more frequently called NIP theories. They form a proper hierarchy of first order theories in which the case n equals to 1 coincides which NIP theories.

In my talk, I give an overview about algebraic extensions of fields defined in structures with certain properties (superstable, stable, NIP, etc.). For instance, infinite NIP fields of positive characteristic are known to be Artin–Schreier closed. I extend this result to the wider class of infinite n-dependent fields for any natural number n and present some applications to valued fields defined in this setting. Secondly, I show that nonseparable closed pseudo-algebraically closed (PAC) fields have the n-independence property for all natural numbers n which is already known for the independence property (n equal to 1) due to Duret. Hence, nonseparable closed PAC fields lie outside of the hierarchy of n-dependent fields.

▸ ASSYLBEK ISSAKHOV, ***Ideals without minimal numberings in the Rogers semilattice***.
Department of Mechanics and Mathematics, Al-Farabi Kazakh National University, 71 Al-Farabi Ave., Almaty 050038, Kazakhstan.
E-mail: asylissakhov@mail.ru.

It is well known many infinite families of c.e. sets whose Rogers semilattice contains an ideal without minimal elements, for instance, the family of all c.e. sets, [3]. Moreover, there exists a computable family of c.e. sets whose Rogers semilattice has no minimal elements at

all, [1]. In opposite to the case of the families of c.e. sets, for every computable numbering α of an infinite family $\mathfrak{F}$ of computable functions, there is a Friedberg numbering of $\mathfrak{F}$ which is reducible to α, [3]. This means that the Rogers semilattice of any computable family of total functions from level 1 of the arithmetical hierarchy contains no ideal without minimal elements.

We study computable families of total functions of any level of the Kleene–Mostowski hierarchy above level 1 and try to find elementary properties of Rogers semilattices that are different from the properties of Rogers semilattices for the families of computable functions.

THEOREM 1. *For every n, there exists a Σ^0_{n+2}-computable family of total functions whose Rogers semilattice contains an ideal without minimal elements.*

Note that every Rogers semilattice of a Σ^0_{n+2}-computable family $\mathfrak{F}$ contains the least element if $\mathfrak{F}$ is finite, [3], and infinitely many minimal elements, otherwise, [2].

Theorem 1 is based on the following criterion that extends the criterion for minimal numbering from [1].

THEOREM 2. *Let α be a numbering of an arbitrary set $\mathcal{S}$. Then there is no minimal numbering of $\mathcal{S}$ that is reducible to α if and only if, for every c.e. set W, if $\alpha(W) = S$ then there exists a c.e. set V such that $\alpha(V) = \mathcal{S}$ and, for every positive equivalence ε, either $\varepsilon \upharpoonright W \not\subseteq \theta_\alpha$ or $W \not\subseteq [V]_\varepsilon$.*

[1] S. A. BADAEV, *On minimal enumerations*. ***Siberian Advances in Mathematics***, vol. 2 (1992), no. 1, pp. 1–30.

[2] S. A. BADAEV AND S. S. GONCHAROV, *Rogers semilattices of families of arithmetic sets*. ***Algebra and Logic***, vol. 40 (2001), no. 5, pp. 283–291.

[3] YU. L. ERSHOV, ***Theory of numberings***, Nauka, Moscow, 1977 (in Russian).

► GRZEGORZ JAGIELLA, *Definable topological dynamics and real Lie groups*.

Instytut Matematyczny, Uniwersytet Wrocławski, pl. Grunwaldzki 2/4, 50-247, Wrocław, Poland.

E-mail: grzegorz.jagiella@math.uni.wroc.pl.

Methods of topological dynamics have been introduced to model theory by Newelski in [3] and since then saw further development in that field by other authors. Given a model M with all types over M definable and a definable group G, we consider the category of definable flows. This category has a universal object $S_G(M)$, the space of types in G over M. It is shown that the Ellis semigroup of this flow is isomorphic to $S_G(M)$ itself. It can be considered as a model-theoretic equivalent to βG, the large compactification of G.

In the talk I will describe the results from [2] that give a description of definable topological dynamics of a large class of groups interpretable in an o-minimal expansion of the field of reals along with their universal covers interpreted in a certain two-sorted structure. The results provide a wide range of counterexamples to a question by Newelski whether the Ellis group of the universal definable G-flow is isomorphic to G/G^{00} and generalize methods from [1] that provided a particular counterexample.

[1] J. GISMATULLIN, D. PENAZZI, AND A. PILLAY, *Some model theory of $SL(2, R)$*, preprint.

[2] G. JAGIELLA, *Definable topological dynamics and real Lie groups*, preprint.

[3] L. NEWELSKI, *Topological dynamics of definable group actions*. ***The Journal of Symbolic Logic***, vol. 74 (2009), no. 1, pp. 50–72.

► ANTONIS KAKAS, FRANCESCA TONI, AND PAOLO MANCARELLA, *Argumentation Logic*.

Department of Computer Science, University of Cyprus, 1 University Avenue 2109 Aglantzia, Cyprus.

E-mail: antonis@ucy.ac.cy.

Department of Computing, Imperial College, London, UK.

E-mail: f.toni@imperial.ac.uk.

Department of Computer Science, University of Pisa, Pisa, Italy.

E-mail: paolo@di.unipi.it.