[LOGIC

COLLOQUIUM)

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ASL
ASSOCIATION FOR SYMBOLIC LOGIC

UNIVERSITY OF LEEDS

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BRITISH LOGIC COLLOQUIUM

Contributed Talks

Set Theory (Room G.02)
16.00 Radek Honzik and Sarka Stejskalova, *The tree property and the continuum function below $\aleph_\omega$* (p. 127)
16.25 Tanmay Inamdar, *A fragment of PFA consistent with large continuum* (p. 94)
16.50 Sherwood Hachtman, *Determinacy and admissible reflection* (p. 90)
17.15 Philipp Schlicht and Fabiana Castiblanco, *Tree forcings and sharps* (p. 120)
17.40 Philipp Lücke, *The infinite productivity of Knaster properties* (p. 106)

Proof Theory (Room G.31)
16.00 Marija Boricic, *Natural deduction probabilized* (p. 64)
16.25 Nobu-Yuki Suzuki, *Relations among some weak variants of existence and disjunction properties in intermediate predicate logics* (p. 127)
16.50 Bahareh Afshari, Stefan Hetzl and Graham Leigh, *Structural representation of Herbrand's theorem* (p. 55)
17.15 Graham Leigh, *The simple truth* (p. 103)
17.40 Kentaro Sato, *Monotone induction can be prolonged by exponential* (p. 120)

Model Theory: Homogeneous Structures (Room 1.33)
16.00 David Bradley-Williams, *Limits of betweenness relations* (p. 65)
16.25 Lovkush Agarwal and Michael Kompatscher, *Continuum-many maximal-closed subgroups for Sym(N) via the Classification of the Reducts of the Henson Digraphs*
16.50 Thomas Coleman, *Permutation monoids and MB-homogeneous structures* (p. 70)
17.15 Daoud Siniora, *A dense locally-finite subgroup of the automorphism group of a free homogeneous structure* (p. 124)
17.40 Nadav Meir, *Infinite products of ultrahomogeneous structures*

Model Theory (Room 1.09)
16.00 Dario Garcia, *On variations of unimodularity and measurability* (p. 83)
16.25 Sylvy Anscombe, *Generalised measurable structures with the Tree Property* (p. 56)
16.50 Alireza Mofidi, *Some symbolic dynamical views in model theory* (p. 107)
17.15 Alexandre Ivanov, *Sofic metric groups and continuous logic* (p. 94)
17.40 Juan de Vicente, *Locally C-Nash groups* (p. 73)

Computability Theory (Room 1.06)
16.00 Nurlan Kogabaev, *Freely generated projective planes with finite computable dimension* (p. 97)
16.25 Ruslan Kornev, *Reducibilities of computable metrics on the real line* (p. 99)
16.50 Nikolay Bazhenov, *Effective categoricity for polymodal algebras* (p. 61)
17.15 Sergey Goncharov, Nikolay Bazhenov and Margarita Marchuk, *Autostability relative to strong constructivizations of computable 2-step nilpotent groups* (p. 106)
17.40 Birzhan Kalmurzaev, *Note on cardinality of Rogers semilattice* (p. 95)

Categorical Logic and Type Theory (Room 1.31)
16.00 Dimitris Tsementzis, *A Syntactic Characterization of Morita Equivalence* (p. 130)
16.25 Ian Orton and Andrew Pitts, *Axioms for Modelling Cubical Type Theory in a Topos* (p. 109)
16.50 Eric Faber, *Relative computability in realisability toposes* (p. 78)
17.15 Jacopo Emmenegger and Erik Palmgren, *Exact completion and constructive theories of sets* (p. 76)
17.40 Maria Emilia Maietti, Fabio Pasquali and Giuseppe Rosolini, *When the tripos-to-topos construction factors through the elementary quotient completion* (p. 112)

Intuitionistic Logic and Theories (Room 1.32)
16.00 Alexey Vladimirov, *Some partial conservativity properties of intuitionistic set theory with scheme collection, and principles DCS and UP* (p. 134)
16.25 Robert Lubarsky, *D-Fan and c-Fan* (p. 105)
16.50 Tatsuji Kawai and Matthew de Brecht, *Interactions between powerlocales and Scott topology on locally compact locales* (p. 95)
17.15 Anupam Das, *Intuitionistic bounded arithmetic and monotone proof complexity* (p. 72)

Nonstandard Analysis and Arithmetic (Room 1.05)
16.00 Sam Sanders, *The unreasonable effectiveness of Nonstandard Analysis* (p. 119)
16.25 Bruno Dinis and Fernando Ferreira, *Interpreting weak König's lemma in nonstandard theories of arithmetic* (p. 73)
16.50 Emanuele Bottazzi, *A nonstandard generalization of the space of distributions and the Schwartz impossibility theorem* (p. 63)
17.15 Imme van den Berg, *Complete arithmetical solids and nonstandard analysis* (p. 131)
17.40 Tin Lok Wong, *A new construction of models of the Weak Koenig Lemma* (p. 137)

[1] V. Pestov, *Hyperlinear and sofic groups: a brief guide*, **Bulletin of Symbolic Logic**, vol. 14 (2008), no. 4, pp. 449–480.

▶ BIRZHAN KALMURZAEV, *Note on cardinality of Rogers semilattices.*

Department of Fundamental Mathematics, Al-Farabi Kazakh National University, 71 Al-Farabi avenue, 050038, Kazakhstan.
E-mail: birzhan_mm@mail.ru.

It is easy to show that

- For every family $\mathcal{S}$ on n-c.e. sets, if the Rogers semilattice $\mathcal{R}_m^{-1}(\mathcal{S})$ is infinite for some $m \geq n$ then $\mathcal{R}_m^{-1}(\mathcal{S})$ is infinite for all $k \geq m$.
- For every two-element family of n-c.e. sets $\mathcal{S} = \{A, B\}$, the Rogers samilattices $\mathcal{R}_m^{-1}(\mathcal{S})$ is infinite if $m > 2n$. If n is even, then this statement is true for $m = 2n$.

All known Rogers semilattices of the family in the hierarchy of Ershov are either one-element or infinite.

THEOREM ([1]). *For every nonzero $n \in \omega \cup \{\omega\}$, and for every ordinal notation a of a nonzero ordinal, there exists a Σ_a^{-1}-computable family $\mathcal{A}$ of exactly n sets such that $|\mathcal{R}_a^{-1}(\mathcal{A})| = 1$.*

Main result:

THEOREM. *For every nonzero $n \in \omega$, there exist n-c.e. sets A and B such that*

$$|\mathcal{R}_n^{-1}(A, B)| = |\mathcal{R}_{n+1}^{-1}(A, B)| = \ldots = |\mathcal{R}_{2n}^{-1}(A, B)| = 1 \text{ if } n \text{ is odd,}$$

$$|\mathcal{R}_n^{-1}(A, B)| = |\mathcal{R}_{n+1}^{-1}(A, B)| = \ldots = |\mathcal{R}_{2n-1}^{-1}(A, B)| = 1 \text{ if } n \text{ is even.}$$

COROLLARY. *For every nonzero $n \in \omega$ and for every $n < m \leq 2n$, there exist n-c.e. sets A and B such that*

$$1 = |\mathcal{R}_n^{-1}(A, B)| = \ldots = |\mathcal{R}_{m-1}^{-1}(A, B)| < |\mathcal{R}_m^{-1}(A, B)|.$$

QUESTION. *Does there exist a family of sets in some level of the hierarchy of Ershov whose Rogers semilattice consists of $2, 3, \ldots$ elements?*

[1] Serikzhan A. Badaev, Mustafa Manat, Andrea Sorbi, *Rogers semilattices of families of two embedded sets in the Ershov hierarchy*, **Mathematical Logic Quarterly**, vol. 58 (2012), no. 4-5, pp. 366–376.

▶ MATTHEW DE BRECHT, AND TATSUJI KAWAI, *Interactions between power-locales and Scott topology on locally compact locales.*

Graduate School of Human and Environmental Studies, Kyoto University, Yoshida-nihonmatsu-cho, Sakyo-ku, Kyoto 606-8501, Japan.
E-mail: matthew@i.h.kyoto-u.ac.jp.
School of Information Science, Japan Advanced Institute of Science and Technology, 1-1 Asahidai, Nomi, Ishikawa 923-1292, Japan.
E-mail: tatsuji.kawai@jaist.ac.jp.