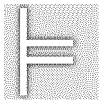
Abstract Booklet

Logic Colloquium

Logic, Algebra and Truth Degrees

Vienna Summer of Logic, July 9–24, 2014

organized by the  kurt gödel society

partisans of foundational frameworks such as predicativism. In doing so we show that the existence of the set of sentences which are computably entailed is equivalent over ACA_0 to Π^1_1 comprehension.

[1] SHORE, R. A., *Reverse Mathematics: The Playground of Logic*, ***The Bulletin of Symbolic Logic***, vol. 16 (2010), no. 3, pp. 378–402.

[2] SHORE, R. A., *Reverse mathematics, countable and uncountable: a computational approach*, ***Effective Mathematics of the Uncountable***, Lecture Notes in Logic, (D. Hirschfeldt, N. Greenberg, J. D. Hamkins, and R. Miller, editors), ASL and Cambridge University Press, Cambridge, 2013, pp. 150–163.

[3] SIMPSON, S G., *Partial realizations of Hilbert's program*, ***The Journal of Symbolic Logic***, vol. 53 (1988), pp. 349–363.

► CHRISTIAN ESPÍNDOLA, *Semantic completeness of first order theories in constructive reverse mathematics.*

Department of Mathematics, Stockholm University, Roslagsv 101 hus 5-6 (10691) Stockholm, Sweden.

E-mail: espindola@math.su.se.

We introduce a general notion of semantic structure for first-order theories, covering a variety of constructions such as Tarski and Kripke semantics, and prove that, over Zermelo Fraenkel set theory (ZF), the completeness of such semantics is equivalent to the Boolean Prime Ideal theorem (BPI). In particular, we deduce that the completeness of that type of semantics for non-classical theories is unprovable in intuitionistic Zermelo Fraenkel set theory IZF ([4]). Using results of Joyal ([2]) and McCarty ([3]), we conclude also that the completeness of Kripke semantics is equivalent, over IZF, to the Law of Excluded Middle plus BPI. By results in [1], none of these two principles imply each others, and so this gives the exact strength of Kripke completeness theorem in the sense of constructive reverse mathematics.

[1] BANASCHEWSKI, B. AND BHUTANI, K., *Boolean algebras in a localic topos,****Mathematical Proceedings of the Cambridge Philosophical Society***, vol. 100 (1986), pp. 43–55.

[2] MAKKAI, M. AND REYES, G., ***First order categorical logic***, Lecture Notes in Mathematics, vol. 611, 1977.

[3] MCCARTY, D.C., *Completeness and incompleteness for intuitionistic logic*, ***Journal of Symbolic Logic***, vol. 73 (2008), no. 4, pp. 1315–1327.

[4] MYHILL, J., *Some properties of Intuitionistic Zermelo-Fraenkel set theory*, ***Proceedings of the 1971 Cambridge Summer School in Mathematical Logic***, Lecture Notes in Mathematics 337, 1973, pp. 206–231.

► MARAT FAIZRAHMANOV, ISKANDER KALIMULLIN, *Limitwise monotonic sets of reals.*

Institute of mathematics and mechanics, Kazan (Volga Region) Federal University, Kremlyovskaya 18, Russian Federation.

E-mail: marat.faizrahmanov@gmail.com.

We extend the limitwise monotonicity notion to the case of arbitrary computable linear ordering to get a set which is limitwise monotonic precisely in the non-computable degrees. Also we get a series of connected non-uniformity results to obtain new examples of non-uniformly equivalent families of computable sets with the same enumeration