ON MINIMAL NUMBERINGS IN THE ERSHOV HIERARCHY

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The talk is devoted to the long-standing problem on number of computable minimal numberings posed by Yu.L. Ershov in 60th of the last century. For the computable families of sets of the arithmetical hierarchy, that number is either 0, or 1, or ω (see [1] for background and details). Badaev and Lempp [2] constructed a family of d.c.e. sets with exactly two Friedberg numberings and no further minimal numberings. Some ideas used in this construction allow to build a family of d.c.e. sets with any positive finite number of Friedberg numberings that exhaust all minimal numberings of the family. Due to the Frank Stephan's Γ-operator [3], analogues result is true for any finite level of the Ershov hierarchy above level 2.

References

[1] Badaev, S.A., Goncharov, S.S. *The Theory of Numberings. Open Problems.* In: Cholak, P.A., Lempp, S., Lerman, M., Shore, R.A. (eds.), Computability Theory and its Applications. Current Trends and Open Problems. Amer. Math. Soc., Prov- idence, (2000), 23–38

[2] Badaev, S.A., Lempp, S. *A decomposition of the Rogers semi-lattice of a family of d.c.e. sets.* Journal of Symbolic Logic, 2009, vol. 74, n. 2, 618–640.

[3] Herbert,I., Jain,S., Lempp S., Mustafa M., and Stephan F. *Reductions between Types of Numberings.* Annals of Pure and Applied Logic, vol. 170, issue 12, December 2019, 102716.

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