

A survey of results on the d.c.e. and n.c.e. degrees

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Abstract

© Springer International Publishing AG 2017. This paper is a survey on the upper semilattices of Turing and enumeration degrees of n.c.e. sets. Questions on the structural properties of these semilattices, and some model-theoretic properties are considered.

http://dx.doi.org/10.1007/978-3-319-50062-1_27

References

- [1] Arslanov, M.M.: Structural properties of the degrees below $0'$. Sov. Math. Dokl. N.S. 283, 270-273 (1985)
- [2] Arslanov, M.M.: On the upper semilattice of Turing degrees below $0'$. Russ. Math. (Iz. VUZ) 7, 27-33 (1988)
- [3] Arslanov, M.M., Cooper, S.B., Li, A.: There is no low maximal d.c.e. degree. Math. Logic Quart. 46, 409-416 (2000)
- [4] Arslanov, M.M., Cooper, S.B., Li, A.: There is no low maximal d.c.e. degree-Corrigendum. Math. Logic Quart. 50, 628-636 (2004)
- [5] Arslanov, M.M., Kalimullin, I.S., Sorbi, A.: Density results in the Δ_0^2 e-degrees. Arch. Math. Logic 40, 597-614 (2001)
- [6] Arslanov, M.M., Kalimullin, I.S., Lempp, S.: On Downey's conjecture. J. Symb. Logic 75, 401-441 (2010)
- [7] Arslanov, M.M., LaForte, G., Slaman, T.A.: Relative enumerability in the difference hierarchy. J. Symb. Logic 63, 411-420 (1998)
- [8] Cooper, S.B.: Degrees of Unsolvability. Ph.D. Thesis, Leicester University, Leicester, England (1971)
- [9] Cooper, S.B.: The density of the low $_2$ n.r.e. degrees. Arch. Math. Logic 31, 19-24 (1991)
- [10] Cooper, S.B.: A splitting theorem for the n.r.e. degrees. Proc. Am. Math. Soc. 115, 461-471 (1992)
- [11] Cooper, S.B., Harrington, L., Lachlan, A.H., Lempp, S., Soare, R.I.: The d.r.e. degrees are not dense. Ann. Pure Appl. Logic 55, 125-151 (1991)
- [12] Cooper, S.B., Li, A.: Non-uniformity and generalised Sacks splitting. Acta Math. Sin., Engl. Ser. 18, 327-334 (2000a)
- [13] Cooper, S.B., Li, A.: Splitting and cone avoidance in the d.c.e. degrees. Sci. China (Ser. A) 45, 1135-1146 (2002b)
- [14] Downey, R.G.: D.r.e. degrees and the nondiamond theorem. Bull. London Math. Soc. 21, 43-50 (1989)
- [15] Downey, R.G., Shore, R.A.: Splitting theorems and the jump operator. Ann. Pure Appl. Logic 94, 45-52 (1997)
- [16] Downey, R.G., Stob, M.: Splitting theorems in recursion theory. Ann. Pure Appl. Logic 65, 1-106 (1993)
- [17] Downey, R.G., Yu, L.: There are no maximal low d.c.e. degrees. Notre Dame J. Formal Logic 45 (3), 147-159 (2004)
- [18] Ershov, Y.L.: On a hierarchy of sets I. Algebra Logika 7 (1), 47-73 (1968a)
- [19] Ershov, Y.L.: On a hierarchy of sets II. Algebra Logika 7 (4), 15-47 (1968b)
- [20] Ershov, Y.L.: On a hierarchy of sets III. Algebra Logika 9 (1), 34-51 (1970) Faizrakhmanov, M.K.: Decomposability of low 2-computably enumerable degrees and Turing jumps in the Ershov hierarchy. Russ. Math. (Iz. VUZ) 12, 51-58 (2010)
- [21] Fang, C., Wu, G., Yamaleev, M.M.: On a problem of Ishmukhametov. Arch. Math. Logic 52, 733-741 (2013)

- [22] Ganchev, H.A., Soskova, M.I.: Definability via Kalimullin pairs in the structure of the enumeration degrees. *Trans. Am. Math. Soc.* 367, 4873–4893 (2015)
- [23] Gold, E.M.: Limiting recursion. *J. Symb. Logic* 30, 28–48 (1965)
- [24] Ishmukhametov, S.N.: On the r.e. predecessors of d.r.e. degrees. *Arch. Math. Logic* 38, 373–386 (1999)
- [25] Ishmukhametov, S.T.: On relative enumerability of Turing degrees. *Arch. Math. Logik Grundl.* 39, 145–154 (2000)
- [26] Kalimullin, I.S.: Elementary theories of semilattices of n-recursive enumerable degrees with respect to enumerability. *Russ. Math. (Iz. VUZ)* 45 (4), 22–25 (2001)
- [27] Kalimullin, I.S.: Splitting properties of n-c.e. enumeration degrees. *J. Symbolic Logic* 67, 537–546 (2002)
- [28] Kalimullin, I.S.: Definability of the jump operator in the enumeration degrees. *J. Math. Logic* 3 (2), 257–267 (2003)
- [29] Kalimullin, I.S.: Elementary differences between the $(2p)$ -c.e. and the $(2p+1)$ -c.e. enumeration degrees. *J. Symbolic Logic* 72, 277–284 (2007)
- [30] Lachlan, A.H.: Lower bounds for pairs of recursively enumerable degrees. *Proc. London Math. Soc.* 16, 537–569 (1966)
- [31] Putnam, H.: Trial and error predicates and the solution to a problem of Mostowski. *J. Symb. Logic* 30, 49–57 (1965)
- [32] Rogers Jr., H.: Theory of Recursive Functions and Effective Computability. McGraw-Hill, New York (1967)
- [33] Welch, L.: A hierarchy of families of recursively enumerable degrees and a theorem of founding minimal pairs. Ph.D. Thesis (University of Illinois, Urbana, 1980) (1980)
- [34] Wu, G., Yamaleev, M.M.: Isolation: motivations and applications. *Uchenue Zapiski Kazanskogo Universiteta* 154 (2), 204–217 (2012)
- [35] Yamaleev, M.M.: The splitting of 2-computably enumerable degrees avoiding the upper cones. *Russ. Math. (Iz. VUZ)* 6, 76–80 (2009)