VALENTINA HARIZANOV, *Effective Categoricity of Injection Structures*

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We study computability-theoretic properties of computable injection structures and the complexity of isomorphisms between these structures. An injection structure is a structure $\mathcal{A} = (A, f)$ with a single unary $1-1$ function f. The orbit of $a \in A$ is $\mathcal{O}_f(a) = \{b \in A : (\exists n \in \mathbb{N})[f^n(a) = b \vee f^n(b) = a]\}$. We prove that a computable injection structure is computably categorical if and only if it has finitely many infinite orbits. A computable injection structure is Δ_2^0-categorical if and only if it has finitely many orbits of type ω or finitely many orbits of type Z. Furthermore, every computably categorical injection structure is relatively computably categorical, and every Δ_2^0-categorical injection structure is relatively Δ_2^0-categorical. We also establish various index set results. The index set of infinite computably categorical injection structures is a Σ_3^0-complete set. The index set of infinite Δ_2^0-categorical injection structure is a Σ_4^0-complete set. This is joint work with Doug Cenzer and Jeff Remmel.

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