VALENTINA S. HARIZANOV, *Effective categoricity of equivalence structures and abelian p-groups.*

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We investigate effectively categorical and relatively effectively categorical computable equivalence structures and abelian p-groups. A computable structure $\mathcal{A}$ is Δ^0_α *categorical* if for every computable isomorphic copy $\mathcal{B}$ of $\mathcal{A}$, there is a Δ^0_α isomorphism from $\mathcal{A}$ onto $\mathcal{B}$. For example, we establish that a computable equivalence structure $\mathcal{S}$ is computably (Δ^0_1) categorical if and only if $\mathcal{S}$ has only finitely many finite equivalence classes, or $\mathcal{S}$ has only finitely many infinite classes, bounded character, and at most one finite k such that there are infinitely many classes of size k. Goncharov and Smith previously characterized computably categorical abelian p-groups.

A computable structure $\mathcal{A}$ is *relatively* Δ^0_α *categorical* if for every $\mathcal{B}$ isomorphic to $\mathcal{A}$, there is an isomorphism that is Δ^0_α relative to the atomic diagram of $\mathcal{B}$. It is known that $\mathcal{A}$ is relatively Δ^0_α categorical if and only iff $\mathcal{A}$ has a formally Σ^0_α Scott family or, equivalently, $\mathcal{A}$ has a computably enumerable Scott family of computable Σ_α formulas. We show that all computable equivalence structures are relatively Δ^0_3 categorical. We further investigate which computable equivalence structures and abelian p-groups are Δ^0_2 categorical and relatively Δ^0_2 categorical. This is joint work with Wesley Calvert, Doug Cenzer, and Andrei Morozov.

[1] W. Calvert, D. Cenzer, V. Harizanov, and A. Morozov, *Effective categoricity of equivalence structures*, **Annals of Pure and Applied Logic** 141 (2006), pp. 61–78.

[2] W. Calvert, D. Cenzer, V. Harizanov, and A. Morozov, *Effective categoricity of abelian p-groups*, submitted.