CATEGORICITY AND COMPLEXITY RELATIONS

OVER ALGEBRAIC STRUCTURES

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We consider the next generalized problems:

The problem of Goncharov S.S. and Manasse M.S. -- *"The problem of characterization of relative categoricity in hyperarithmetical hierarchies by given levels of complexity of Scott families"* and *"The problem of connection of relative categoricity of computable presentations and abstract presentations"*.

The problem of Ash C.J. and Nerode A.--*"The problem of connection between relations of bounded complexity in hyperarithmetical hierarchies on different presentations and definability of relations by formulas of given complexity"*.

Let σ_0 is a signature of oriented graph; σ_1 is a signature of symmetric irreflexive graph; σ_2 is a signature of integral domains; σ_3 is a signature of commutative semigroups; σ_4 is a signature of nilpotent groups; σ_5 is a signature of lattices; σ_6 is a signature with two equivalences.

Theorem 1i. *For each computable ordinal α there is a computable structure A of signature σ_i that is Δ_α^0 categorical but not relatively Δ_α^0 (and without formally Σ_α^0 Scott family).*

Theorem 2i. *For each computable ordinal α there is a computable structure A of signature σ_i with additional relation R that is intrinsically Σ_α^0 but not relatively intrinsically Σ_α^0 on A.*

REFERENCES

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2. Goncharov S. S., Isomorphisms and definable relations on Computable Models // Proceeding of the Logic Colloquium 2005, Athens}, pp.26—45