ON THE CLASSIFICATION OF FUNCTIONAL CLONES BY ITS FORMULA AND TYPES DEFINABLE SUBSETS

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As the any functional clone F on the set A is the clone $Tr(\mathfrak{A}_F)$ of termal functions for the universal algebra $\mathfrak{A}_F =< A; F >$, we have natural interest on the classification of clones F on A by some derived structures of this algebras $\mathfrak{A}_F$, for example, by its algebraic geometries, by Boolean algebras of formula defined subsets of algebra $\mathfrak{A}_F$, by collections of subsets defined by elementary types in $\mathfrak{A}_F$.

We define the clones F_1, F_2 on the set A as *algebraically equivalent* ($F_1 \sim_{alg} F_2$), if coincide the algebraic geometries of algebras $\mathfrak{A}_{F_1}$ and $\mathfrak{A}_{F_2}$ (it is are the collections of algebraic sets of this algebras, see, for example, [1]). Two clones F_1, F_2 on the set A we define as L_0 - *logically equivalent* ($F_1 \sim_{log} F_2$), if coincide the Boolean algebras of quantifier free formula sets of algebras $\mathfrak{A}_{F_1}$ and $\mathfrak{A}_{F_2}$. Two clones F_1, F_2 on the set A we define as *elementary equivalent* ($F_1 \sim_{el} F_2$) if coincide the families of sets defined by elementary types in algebras $\mathfrak{A}_{F_1}$ and $\mathfrak{A}_{F_2}$.

For any clone F on the set A let $PCT(F)$,$CT(F)$,$ECT(F)$ are functional clones of all positive conditional termal, conditional termal, elementary conditional termal functions of algebra $\mathfrak{A}_F$ (see, for example, [2]).

The clone F on A is *additive* (see [1]), if any union of its algebraic sets is also its algebraic set.

Then we have

THEOREM. For any finite set A and any clone F on A:

a) if F is additive clone, then $F \sim_{alg} PCT(F)$,

b) $F \sim_{log} CT(F)$,

c) $F \sim_{el} ECT(F)$.

Let F_A be the collection of all functional clones on A.

COROLLARY. For any finite set A :

a) Any collection of pairwise algebraically non-equivalent additive clones on A is finite,

b) sets $F_A/\sim_{log}$, $F_A/\sim_{el}$ are finite.

REFERENCES

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