HEREDITARILY FINITE AND LIST SUPERSTRUCTURES

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The notion of $\Sigma-$definability of structures in admissible sets was introduced by Ershov [1]. Later it was developed into several notions, different in the power of preservation of desirable structure properties, such as, for example, $\Sigma-$theory of a structure.

In this talk we will discuss properties of hereditarily finite $\mathbb{HF}(\mathfrak{M})$ and hereditarily finite list superstructures $\mathbb{HW}(\mathfrak{M})$ with regard to this $\Sigma-$definability notions.

We will also discuss algorithmic complexity of models of theory of lists GES [2], namely list structures $LS(\mathcal{M})$ and enriched list structures $ELS(\mathcal{M})$. The motivation behind the definitions lies in semantic programming. This concept uses the theory GES. A typical model of GES is the hereditarily finite list superstructure $\mathbb{HW}(\mathcal{M})$, then the structure $ELS(\mathcal{M})$ is a substructure of $\mathbb{HW}(\mathcal{M})$.

As the theory of $\mathbb{HW}(\mathcal{M})$ is undecidable, we are interested in decidability of the theories of such list structures. Goncharov [3] proved that the decidability of the theory of $\mathcal{M}$ implies that the theory of $LS(\mathcal{M})$ is also decidable. We also exhibit automatic properties of different classes of list structures using the framework of automatic and tree-automatic structures.

References

[1] Ershov, Yu. L., *Definability and Computability*, Consultants Bureau, New York-London-Moscow, 1996.

[2] Goncharov, S. S., Sviridenko, D. I., *$\Sigma-$programming (Russian)*, Vych. Sist., (1985), no. 107, pp. 3–29.

[3] Goncharov, S. S., *Lists theory and its models (Russian)*, Vych. Sist., (1986). no. 114, pp. 84–95.