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THE ω_1-LIKE RECURSIVELY SATURATED MODELS OF ARITHMETIC

Every countable structure is determined, up to isomorphism, by its $L_{\infty,\omega}$ theory (Scott's theorem). It is well known that the analogous fact for structures of power λ_1 and the logic L_{∞,ω_1} is not true.

Natural examples of non isomorphic L_{∞,ω_1}-elementarily equivalent structures can be found among ω_1-like recursively saturated models of PA. In [1] and [2] it is shown that for such structures the expressive power L_{∞,ω_1} is exactly the same as that of $L_{\infty,\omega}$, and a construction of non isomorphic models which are elementarily equivalent in infinitary stationary logic $L_{\infty,\omega_1}(aa)$ is given. The main construction in [2] uses the diamond principle $\diamond$. An alternative construction in ZFC has been provided by J. F. Schmerl (unpublished). The aim of this sort talk is to discuss some of main ideas behind the above results.

References

[1] R. Kossak, *L_{∞,ω_1}-elementary equivalence of ω_1-like models of PA*, **Fundamenta Matematicae**, vol. 123 (1984), pp. 123–131.

[2] R. Kossak, *Recursively saturated ω_1-like models of arithmetic*, **Notre Dame Journal of Formal Logic**, vol. 26 (1985), pp. 413–422.

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