UIC Model Theory Seminar, April 5, 2005

Do uncountable models count?

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We will discuss the results of Makkai and Harnik that every counterexample to the Vaught conjecture has an uncountable model; indeed it has both an uncountable model which is ∞, ω-equivalent to a countable model and one which is not. We give an 'admissible set free' proof of the first result. Further, we observe that any first order counterexample to Vaught's conjecture has $2^{\aleph_1}$ models of power $\aleph_1$. We consider methods of improving this result to $L_{\omega_1,\omega}$. Methodologically, we consider the roles of 'admissible set' and 'model theoretic' technology in investigating the Vaught Conjecture and related problems.