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Infinite Models of Inconsistent Arithmetic

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Whilst, of course, Peano Arithmetic has no finite models in the standard sense, Graham Priest et al have shown that it does have finite models if we replace the overlying classical predicate logic with PL, Priest's so called Paradox Logic.

Several papers have appeared in the last decade giving simple characterizations of all the possible finite PL-models of Arithmetic, essentially they are all formed by taking the congruence classes of certain congruence relations on classical models. This led Priest to conjecture that the same was true also in the the infinite case.

In my talk I shall describe recent work on this conjecture by Alla Sirokofski and myself, in particular showing that *if* Priest's conjecture is correct then there must be sub-exponential truth definitions for Δ_0 sentences in arithmetic.