

A FINITARY CONSTRUCTION OF A P-ADIC CLOSURE OF A COMPUTABLE P-VALUED FIELD

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This lecture is a report on recent work of Evan Eakins.

We give a finitary construction of a p -adic closure L of a computable p -valued field (K, v) , as the set of equivalence classes of uniquely satisfiable formulae with one free variable in Macintyre's language $\mathcal{L} = \{+, -, \cdot, ^{-1}, 0, 1, V, P_2, P_3, \dots\}$ for \mathbb{Q}_p , augmented by a constant symbol c_k for each element $k \in K$. The proof that this L satisfies Macintyre's axioms for p -adically closed, valued fields relies upon (among other things) van den Dries' result (constructivized by Scowcroft, using a lemma of Denef) that the theory of p -adically closed fields admits definable Skolem functions.

This is joint work with Evan Eakins