

- PHILIP DITTMANN, *Models of the common theory of algebraic extensions of the rational numbers.*

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Although the theory of algebraic extensions of \mathbb{Q} has many properties normally seen as undesirable – for instance it is not computably enumerable, and has many completions with bad stability properties –, it still makes sense to investigate its non-standard models. Using the model theory of local fields, as well as some algebraic ingredients interesting in their own right, one can show that every such “non-standard algebraic” field is dense in all its real and p -adic closures. Along the way, we will encounter the classical notion of the Pythagoras number from field theory, as well as a new p -adic version of the same, inspired by axiomatisations of the universal theory of local fields. As a consequence of the denseness, we obtain a result on definability of the valuation ring in henselian fields whose residue field is a number field.

This is joint work with Sylvie Anscombe and Arno Fehm.