

Algebraic closures of a field equipped with a valuation fan

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We present and study the theory of “Henselian Residually Real-Closed Fields” as an extension of the theory of generalized real-closed fields (closed for orderings of higher level in the sense of E. Becker), and of real-closed fields (closed for usual orderings as studied by Artin-Schreier).

These fields are closed for a valuation fan, or equivalently for a generalized signature (in the sense of N. Schwartz), or for a R-place.

Special cases of these first order axiomatizable theories will be considered, for instance Rolle fields (as in Brown-Craven-Pelling) and chain-closed fields (as in Becker-Harman-Rosenberg).

We shall also give a theorem providing the uniqueness of the closure.