

Combinatorial geometries of the field extensions

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- $\text{cl}(Y) = \bigcup_{T \subseteq Y \text{ finite}} \text{cl}(T)$
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$x \sim y \Leftrightarrow \text{cl}(\{x\}) = \text{cl}(\{y\})$ $\text{cl}_{\sim}(\frac{A}{\sim}) = \frac{\text{cl}(A) \setminus \text{cl}(\emptyset)}{\sim}$

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induces the geometry, which we denote by $\mathbb{G}(L/K)$

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NO

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Methods: 'rank one' and 'higher rank' group configuration of Hrushovski
(for $G_a(L) \rtimes G_m(L)$)

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when L, L' are perfect, and K, K' are relatively algebraically closed

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apply this to $K \subseteq L \subseteq \widehat{L}$

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$$\{\text{acl}_K(x^a * y^b * z^c) : a, b, c \in \mathbb{Z}\} \cong \mathbb{P}^3(\mathbb{Q})$$

is coordinatised by \mathbb{Q}

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Evans and Hrushovski proved, that any projective plane in $\mathbb{G}(L/K)$ is a subplane of a plane like above.

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Let $K \prec L \models \text{ACF}$ and $\text{trd}_K(L) \geq 3$. Field F can coordinatise some projective plane in $G(L/K)$ iff F can be embedded into

- ($\text{char} = 0$) $K, \mathbb{Q}(\sqrt{-d})$ for some $d < \omega$
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