On pseudo-finite dimensional representations of $sl_2(K)$

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This report aims at illustrating the main results of two joint works, the former with Ivo Herzog [2] and with Angus Macintyre [**?**], both devoted to a model theoretic investigation of the so called pseudo-finite dimensional representations of $sl_2(K)$, the Lie algebra of trace zero 2×2 matrices over an algebraically closed field K of characteristic zero. They were introduced by [1] as infinite dimensional representations such that they satisfy every first-order sentence of the theory of finite dimensional representations of $sl_2(K)$. We analyze some aspects by different methods arising from algebraic geometry and number theory.

References

[1] I. Herzog, *The pseudo-finte dimensional representations of* $sl(2, k)$, Selecta Mathematica, 7 (2001), 241-290

[2] S. L'Innocente, I. Herzog, *The nonstandard quantum plane*, in progress

[3] S. L'Innocente, A. Macintyre, *On pseudo-finte dimensional representations of* $sl_2(K)$, in progress