The Heisenberg group $H(F)$ of a field $F$ is the upper-triangular subgroup of $GL_3(F)$. This essentially describes an interpretation of $H(F)$ in $F$, via $\Delta^0_1$ formulas. There is a well-known $\Delta^0_1$ interpretation of $F$ in $H(F)$ as well, but it requires two parameters from $H(F)$.

A group led by Andrey Morozov recently produced a computable functor from the category of presentations of $H(F)$ to the category of presentations of $F$. (Each category consists of all structures with with domain $\omega$ that are isomorphic to the given one; the morphisms in the category are isomorphisms.) A theorem in [1] then proves that there must be an effective interpretation of $F$ in $H(F)$ without parameters, possibly using computable infinitary $\Sigma^0_1$ formulas. We will describe the work of Morozov’s group, which includes Alvir, Calvert, Harizanov, Knight, Soskova, Weisshaar, and the speaker, and we will discuss the interpretation that results from it.

References


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