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On minimal expansions of elementary extensions of the ordered group of integers

Joint work with Eran Alouf and Antongiulio Fornasiero

Abstract. By a result of Conant, there are no reducts of $(\mathbb{Z}, +, <)$ which strictly expand the structure $(\mathbb{Z}, +)$. In other words, $(\mathbb{Z}, +, <)$ is a *minimal* expansion of $(\mathbb{Z}, +)$. A family of such minimal expansions was given by Alouf and d’Elbée: all the expansions coming from a p -adic valuation. However, if $(M, +, <)$ is a saturated enough elementary extension of $(\mathbb{Z}, +, <)$, it is no longer a minimal extension since one may add a predicate for an infinite interval. A natural question that arises is whether there are any *stable* intermediate structures. It turns out that the answer is “no”. This is in contrast with the situation of the p -adic valuation expansions.

I will discuss this result in the context of a more general theorem about expansions of 1-based weakly-minimal torsion-free abelian groups. All notions will be explained in the talk.