

Externally definable groups in NIP theories

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NIP is a large class of first-order theories containing stable and o-minimal theories, along with algebraically closed valued fields and p-adics. Study of groups definable in NIP theories and their model theoretic connected components led to a resolution of Pillay's conjecture on o-minimal groups. While definability of types is a characteristic feature of stable theories, it turns out that externally definable sets, i.e. those subsets of a model which can be represented as traces of sets definable in an elementary extension, still demonstrate tame behavior in NIP theories. I will overview what is known about externally definable groups, and present some new results on externally definable/interpretable fsg groups and hyperdefinable groups that arise in their study.

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