

Short pp-definitions for algebras with few subpowers

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A finite algebra \mathbf{A} has *few subpowers*, if the number of invariant relations $R \leq \mathbf{A}^n$ is bounded by $2^{p(n)}$, for some polynomial p . Aichinger, Mayr and McKenzie proved in 2014 that every algebra \mathbf{A} with few subpowers is finitely related, i.e. there is a finite set of relations $\Sigma = \{R_1, \dots, R_k\}$, such that all invariant relation have a pp-definition in Σ . Let us say that \mathbf{A} has *short pp-definitions* if, additionally, $R \leq \mathbf{A}^n$ can be defined by such a pp-formula of length at most $q(n)$, for some polynomial q . In this talk, I would like to motivate this notion as a natural witness for the *non*-membership in subpowers (dual to compact representations), and present a new result, stating that all algebras with few subpowers that generate residually finite varieties have short pp-definitions.

¹Joint work with Jakub Bulín, Charles University.