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Alexandr Kazda* (alex.kazda@gmail.com), Katedra algebr MFF UK, Sokolovska 83, Praha 8, 18675 Prague, Czech Rep, and **Michael Kompatscher**. *Maltsev conditions invariant under permutation group actions.*

Maltsev conditions are essentially functional equations to be solved in a given algebra. Classically, Maltsev conditions helped investigate the properties of congruence lattices in varieties. More recently, certain Maltsev conditions turned out to describe the hardness of the Constraint Satisfaction Problem with a fixed target structure.

In our talk, we will study the problem of deciding, for a fixed Maltsev condition C , if an input finite idempotent algebra satisfies the condition C . The complexity of this problem depends on C in a way that is far from understood. We essentially only have one polynomial time algorithm, the “local to global” algorithm, and we lack tools for proving hardness.

In this talk, we will investigate a class of conditions (suggested to us by Matt Valeriote) that have the shape

$$f(x_1, \dots, x_n) \approx f(x_{\sigma(1)}, \dots, x_{\sigma(n)}),$$

where f is an operation symbol and σ ranges over a fixed group of permutations \mathbf{G} ; denote this system of identities by $I(\mathbf{G})$. We will sketch why the “local to global” algorithm fails for $I(\mathbf{S}_n)$ when $n \geq 3$ and speculate about the properties of \mathbf{G} that lead to tractability or hardness of deciding $I(\mathbf{G})$ for idempotent algebras. (Received September 16, 2019)