Locally finite discriminator varieties with group stalks

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Through the work of R. McKenzie and M. Valeriote (1989) we know that locally finite equationally defined classes of algebras (i.e. varieties) which have a decidable first-order theory must decompose, in a certain way, into three special components: a strongly abelian variety, an affine variety, and a discriminator variety.

While the decidable locally finite strongly abelian varieties have been completely described by M. Valeriote, the problem of determining which locally finite affine and discriminator varieties are decidable remains open.

In this talk, we will focus our attention on the discriminator component, for which only sporadic results have been known so far, and describe the progress made towards a better understanding of universal classes of algebras giving rise to such varieties.

In particular, we consider those varieties that have group stalks and present some new conditions of essentially model-theoretic nature which entail the decidability of the first-order theory.

This is the joint work with R. Willard (Waterloo).