

1092-08-228

Keith Kearnes, Ágnes Szendrei and Ross Willard* (rdwillar@uwaterloo.ca). *Varieties with a difference term and Park's conjecture.*

In the early 1970s, Kirby Baker proved his celebrated finite basis theorem: if a variety \mathcal{V} is finitely generated, congruence distributive, and has just finitely many fundamental operations, then the identities of \mathcal{V} are logically implied by a finite subset of the identities. (\mathcal{V} is said to be *finitely based*.) In his 1976 PhD thesis, Robert Park conjectured a bold generalization of Baker's theorem: if the variety \mathcal{V} is finitely generated, has a finite residual bound, and has just finitely many fundamental operations, then \mathcal{V} is finitely based. Since then, Ralph McKenzie confirmed Park's conjecture for congruence modular varieties (1987), and I confirmed it for congruence meet-semidistributive varieties (2000).

A *difference term* for a variety \mathcal{V} is a term $d(x, y, z)$ which satisfies the identity $d(x, x, y) \approx y$ and the property that $(d(a, b, b), a) \in [\text{Cg}^{\mathbf{A}}(a, b), \text{Cg}^{\mathbf{A}}(a, b)]$ for all $\mathbf{A} \in \mathcal{V}$ and all $a, b \in A$. Every congruence modular variety or congruence meet-semidistributive variety has a difference term. We provide a common generalization of the previous finite basis theorems by confirming Park's conjecture for varieties with a difference term. (Received August 10, 2013)