Clifford Bergman* (cbergman@iastate.edu). Finding sharply congruence-$k$-permutable algebras. Preliminary report.

A variety $\mathcal{V}$ is $congruence-k$-permutable if for any algebra $A \in \mathcal{V}$ and any two congruences $\theta$ and $\psi$ of $A$, the join of $\theta$ and $\psi$ in the congruence lattice is equal to $\theta \circ \psi \circ \theta \circ \cdots$ (with $k - 1$ many relative products). The traditional notion of congruence permutability coincides with congruence-2-permutable. We shall call an algebra $sharply k$-permutable if it generates a variety that is congruence-$k$-permutable but not $(k - 1)$-permutable.

For $k > 2$ the task of finding finite sharply $k$-permutable algebras is surprisingly difficult. Few examples appear in the literature. We shall discuss methods for finding “random” $k$-permutable algebras and the potential for success. (Received January 10, 2017)