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John F Boozer* (mostillogical@gmail.com), 800 State St, Apt 159, West Columbia, SC 29169. *On the Finite Axiomatizability of Equational Theories of Automatic Algebras.*

An algebra is a set of elements equipped with some finitary operations represented by a selected set of operation symbols. Using the operation symbols, we can form equations that describe identities in the algebra. We can investigate to see if the set of equations that hold in an algebra is axiomatizable by a finite set of equations, for which we call the algebra finitely based. If not, we can further ask if the algebra satisfies a stronger condition we call inherently nonfinitely based. For instance all finite groups and rings were shown in 1964 and 1973, respectively, to be finitely based.

A finite automaton can be represented in an algebraic way to give us a type of groupoid, which we call an automatic algebra. Automatic algebras are of interest because, unlike groups and rings, among finite automatic algebras there are examples, already in the literature, of finitely based algebras, inherently nonfinitely based algebras, and those that are neither.

In this dissertation we will begin to classify the finite automatic algebras into the three categories, as well as developing tools and methods useful for dealing with automatic algebras. (Received January 17, 2017)