1147-03-858   **Jennifer Chubb*** (`jcchubb@usfca.edu`), USF Dept. of Mathematics, 2130 Fulton St., San Francisco, CA 94117, and **Iva Bilanovic** and **Sam Roven**. *Decision problems in algebraic structures.*

The complexity of the word, conjugacy, and isomorphism problems have long been of interest in combinatorial group theory, logic, and algebra in general. Motivating questions are whether the presentation of a group in terms of generators and relators can shed any light on the existence of algorithms that solve these problems, or whether the groups exhibit other properties of interest. These questions are formulated as what we call detection problems, questions of the form "Does presentation P yield a group which exhibits property X?"

We consider detection problems in two classes of descriptions of groups: recursive presentations and computable atomic diagrams, and ask whether it is possible to effectively determine whether or not the group has some specified property from a description. When there is such an effective procedure, the property is *recursively recognizable* within that class of descriptions. When there is not, we ask how algorithmically complex detection would be.

We consider a broad class of properties, which include being torsion-free, trivial, nilpotent, or abelian, and give precise characterizations of the algorithmic complexity of the corresponding detection problems. (Received January 29, 2019)

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