

1125-VJ-3013

Hakim J. Walker* (hjwalker@gwu.edu), 801 22nd Street NW, Room 724A, Washington, DC
22202. *Effective Categoricity of Infinite Directed Graphs and Trees*. Preliminary report.

Two computable structures \mathcal{A} and \mathcal{B} are *computably isomorphic* if there exists a computable isomorphism from \mathcal{A} to \mathcal{B} . Furthermore, we say that \mathcal{A} is *computably categorical* if every two computable copies of \mathcal{A} are computably isomorphic. Significant work on computable categoricity (or effective categoricity) has been done for a variety of mathematical structures, including linear orders, abelian groups, Boolean algebras, and many others.

We introduce the notion of a (2,1):1 structure, which consists of a countable set A (usually the natural numbers) together with a function $f : A \rightarrow A$ such that for every element x in A , f maps either exactly one or exactly two elements of A to x . These structures extend the notions of injection structures, 2:1 structures, and (2,0):1 structures studied by Cenzer, Harizanov, and Remmel, all of which can be thought of as infinite directed graphs. In this talk, we investigate various computability-theoretic properties of (2,1):1 structures, provide conditions under which such structures are (and are not) computably categorical, and present some interesting examples. (Received September 20, 2016)