

Meeting: 1001, Evanston, Illinois, SS 8A, Special Session on Computability Theory and Applications

1001-03-283 **Bakhadyr Khossainov***, Computer Science Department, The University of Auckland, New Zealand, **Steffen Lempp** (lempp@math.wisc.edu), Mathematics Department, The University of Wisconsin, Madison, WI, and **Theodore A Slaman** (slaman@Math.Berkeley.EDU), Mathematics Department, The University of California, Berkeley, CA. *Computably Enumerable Algebras, Their Expansions, and Isomorphisms.*

Computably enumerable (c.e.) algebras are the ones whose positive atomic diagrams are computably enumerable. Computable algebras are the ones whose atomic diagrams are computable. We investigate c.e. algebras and provide several algebraic and computable theoretic distinctions of these algebras from the class of computable algebras. In particular, we characterize computably enumerable but not computable algebras in algebraic terms. Our characterization, for example, shows that computable conjunction of negative atomic formulas true in a given c.e. algebra is preserved in infinitely many homomorphic images of the algebra. We also study questions on how expansions of algebras by finitely many new functions influence computable isomorphism types. In particular, we construct a c.e. algebra with unique computable isomorphism type but which has no finitely generated c.e. expansion. (Received August 29, 2004)