1058-06-18 **Stephen L Bloom*** (bloom@cs.stevens.edu), Department of Computer Science, Hoboken, NJ 07030, and **Zoltan Esik** (ze@inf.u-szeged.hu), Department of Informatics, University of Szeged, Szeged, Hungary. *Algebraic Linear Orderings.*

An algebraic linear ordering is a component of the initial solution of a first-order recursion scheme over the continuous categorical algebra of countable linear orderings equipped with the sum operation and the constant **1**, denoting the one point linear order. Due to a general Mezei-Wright type result, algebraic linear orderings are exactly those isomorphic to the linear ordering of the leaves of an algebraic tree. Using Courcelle's characterization of algebraic trees by deterministic context-free languages, we obtain the fact that a linear ordering is algebraic iff it can be represented as the lexicographic ordering of a deterministic context-free language. When the algebraic linear ordering is a well-ordering, its order type is an algebraic ordinal. We prove that the Hausdorff rank of any scattered algebraic linear ordering is less than ω^ω. It follows that the algebraic ordinals are exactly those less than ω^{ω^ω}. (Received December 01, 2009)