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David M. Clark* (clarkd@newpaltz.edu), Mathematics Department, Faculty Office Building E1, SUNY, New Paltz, NY 12561. *Generating algebraic terms by evolutionary computation.*

Assume we are given a primal algebra and a table for an operation on its underlying set. A simple computation shows that the problem of finding a term (a switching circuit) to represent (compute) that operation by any kind of exhaustive search is computationally unfeasible in all but the simplest cases. In 2008 the speaker was part of a team that won first place in the ACM's GECCO Humie competition by giving experimental evidence that evolutionary computation can sometimes be effectively used to find these terms. Success in this process requires that small mutations in a term result in small changes to the resulting term operation. In other words, the map of term to term operation must be continuous. In this talk we present a theorem which gives testable conditions on a finite groupoid for this to be true, and we give evidence that these conditions hold for almost all finite groupoids. (Received September 09, 2012)