

1057-05-325

Jesus De Loera and **David Haws*** (dchaws@gmail.com), UNIVERSITY OF KENTUCKY,
Department of Statistics, 817 PATTERSON OFFICE TOWER, Lexington, KY 40506-0027, and
Jon Lee and **Allison O’Hair**. *Computation in Multicriteria Matroid Optimization*.

Optimizing over a matroid has applications to experimental design, data mining (minimal variance clustering), and the problem of finding minimum norm spanning trees. Motivated by recent work on algorithmic theory for nonlinear and multicriteria matroid optimization, we have developed algorithms and heuristics aimed at practical solutions of large instances of some of these difficult problems. Our methods primarily use the local adjacency structure inherent in matroid polytopes to pivot to feasible solutions which may or may not be optimal. We also present a modified breadth-first-search heuristic that uses adjacency to enumerate a subset of feasible solutions. We present other heuristics, and provide computational evidence supporting our techniques. We implemented all of our algorithms in the software package MOCHA. (Received January 25, 2010)