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Frank Sottile* (sottile@math.tamu.edu), Department of Mathematics, Texas A&M University, College Station, TX 77840, and **Jonathan D Hauenstein**, Department of Applied and Computational Mathe, University of Notre Dame, Notre Dame, IN 46556. *Numerical computation of Newton polytopes.*

The Newton polytope of a polynomial f is a combinatorial approximation to f that also encodes much information about the hypersurface H defined by f . In this talk, I will address the problem of how to recover the Newton polytope (or even f) when H is represented numerically via a witness set, which is a data structure capturing the notion of a generic point of H . This talk will describe witness sets and how such a representation may arise without knowledge of f , explain an algorithm for solving this problem, and perhaps how it was used to find a face of the Lüroth invariant. (Received September 04, 2014)