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Jonathan D Hauenstein* (jhauenst@fields.utoronto.ca), 222 College St, Toronto, Ontario M5T 3J1, Canada. *Computing Hilbert functions using dual bases*. Preliminary report.

Dual bases, based on Macaulay's inverse systems, are used in many computations in algebraic geometry, including multiplicity, local dimension, and primary components. After introducing dual bases and some computations involving them, this talk will describe an algorithm that uses a dual basis to compute the Hilbert function and dimension of a homogeneous ideal. Parallelizing this algorithm will also be discussed. (Received September 21, 2009)