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**Matthew F Menture\*** (30menture@cua.edu), Matthew Menture, Department of Mathematics, 620 Michigan Avenue NE, Washington, D.C., DC 20064. *Gröbner bases with respect to several monomial orderings and computation of Hilbert-type dimension polynomials.*

Let  $R = K[x_1, \dots, x_n]$  be a ring of polynomials over a field  $K$  of characteristic zero, and let a partition of the set of variables into  $p$  disjoint subsets be fixed ( $1 \leq p \leq n$ ). Treating  $R$  as a filtered ring with the natural  $p$ -dimensional filtration, we consider a special type of reduction in a free  $R$ -module and develop the corresponding Gröbner-type basis technique that allows one to prove that the  $p$ -variable Hilbert function of a finitely generated filtered  $R$ -module is polynomial. We also present a method of computation of this function based on a generalization of the Buchberger algorithm to the case of several monomial orderings. (Received September 17, 2018)