

1067-11-1621      **Adriana Salerno\*** ([asalerno@bates.edu](mailto:asalerno@bates.edu)), 3 Andrews Rd, Lewiston, ME 04240. *The Dwork Family and Hypergeometric Functions.*

In his work studying the Zeta functions of families of hypersurfaces, Dwork came upon a one-parameter family of hypersurfaces in  $\mathbb{P}^{n-1}$  (now known as *the Dwork family*), defined by:

$$X_\lambda : x_1^n + \cdots + x_n^n - n\lambda x_1 \cdots x_n = 0.$$

These examples were not only useful to Dwork in his study of his deformation theory for computing Zeta functions of families, but they have also proven to be extremely useful to physicists working in mirror symmetry. A startling result is that these families are very closely linked to hypergeometric functions. This phenomenon was carefully studied by Dwork in the cases where  $n = 3, 4$  and for  $n = 5$  by Candelas, de la Ossa, and Rodríguez-Villegas. Dwork, Candelas, et.al. observed that, for these families, the differential equation associated to the Gauss-Manin connection is in fact hypergeometric. We have developed a computer algorithm, implemented in Pari-GP, which can check this result for larger values of  $n$  by computing the Gauss-Manin connection and the parameters of the hypergeometric differential equation. (Received September 21, 2010)