

## Comprehensive Gröbner bases and $A$ -hypergeometric systems

Laura Felicia Matusevich

Department of Mathematics, University of California at Berkeley, Berkeley CA 94720, USA  
[laura@math.berkeley.edu](mailto:laura@math.berkeley.edu)

$A$ -hypergeometric systems are left ideals in the Weyl algebra that depend on parameters. As the parameters vary, the behaviour of the holonomic rank of such systems is of interest. Using comprehensive Gröbner bases, we show that the level sets of the holonomic rank are Zariski constructible. However, this does not provide an effective computational tool. Conjecturally, the set of parameters for which the holonomic rank is strictly greater than its generic value has a very simple structure: it is the union of affine spaces of different dimensions.