1125-14-2417 **Timothy Duff**, **Cvetelina Hill**, **Anders Jensen**, **Kisun Lee**, **Anton Leykin*** (leykin@math.gatech.edu) and **Jeffrey Sommars**. *Solving polynomial systems via homotopy continuation and monodromy.*

We develop an algorithm to find all solutions of a generic system in a family of polynomial systems with parametric coefficients using numerical homotopy continuation and the action of the monodromy group. We argue that the expected number of homotopy paths that this algorithm needs to follow is roughly linear in the number of solutions. We demonstrate that our software implementation is competitive with the existing state-of-the-art methods implemented in other software packages. (Received September 20, 2016)