1106-49-909 **Julia Eaton*** (jreaton@uw.edu), Interdisciplinary Arts & Sciences, Box 358436, 1900 Commerce St., Tacoma, WA 98402, and **Mert Gürbüzbalaban**, **Sara Grundel** and **Michael L Overton**.
Optimal Solutions to a Root Minimization Problem over a Polynomial Family with Affine Constraints.

Consider the system $y' = A(x)y$, where A is a matrix depending on a parameter $x \in \Omega \subset \mathbb{C}^k$. This system is Hurwitz-stable if the eigenvalues of $A(x)$ lie in the left half of the complex plane and Schur-stable if the eigenvalues of $A(x)$ lie in the unit disk. A related topic is to consider polynomials whose coefficients lie in a parameter set. In 2012, Blondel, Gürbüzbalaban, Megretski and Overton investigate the Schur and Hurwitz stability of monic polynomials whose coefficients lie in an affine hyperplane of dimension $n-1$ in $\mathbb{R}$ and $\mathbb{C}$, respectively. They provide explicit global solutions to the radius minimization problem and closely related results for the abscissa minimization problem for a family of polynomials with one affine constraint. In addition to their theoretical results, the authors provide Matlab implementations of the algorithms they derive. A major question that is left open is: suppose there are $\nu \in \{2, \ldots, n-1\}$ constraints on the coefficients, not just one. Our current work is to extend results on the polynomial radius and abscissa minimization problems to this more general case. (Received September 08, 2014)