1124-65-87 **Jonathan D Hauenstein*** (hauenstein@nd.edu), 152C Hurley Hall, University of Notre Dame, Notre Dame, IN 46556, and **Heather Harrington**, **Helen Byrne** and **Dhagash Mehta**.
Decomposing the parameter space.

Many systems in applications can be described by systems of ordinary differential equations containing large numbers of parameters. When studying the dynamic behavior of these large, nonlinear systems, it is useful to identify and characterize the steady-state solutions as the model parameters vary, a technically challenging problem in a high-dimensional parameter landscape. Rather than simply determining the number and stability of steady-states at distinct points in parameter space, we decompose the parameter space into finitely many regions, the number and structure of the steady-state solutions being consistent within each distinct region. From a computational algebraic viewpoint, the boundary of these regions is contained in the discriminant locus. We develop global and local numerical algorithms for constructing the discriminant locus and classifying the parameter landscape. We showcase our numerical approaches by applying them to molecular and cell-network models. (Received August 30, 2016)