1117-92-457   **Daniel J. Bates**, **Brent Davis**, **Elizabeth Gross*** (`elizabeth.gross@sjsu.edu`), **Kenneth L. Ho** and **Heather A. Harrington**. *Model selection in systems biology with numerical algebraic geometry.*

Researchers from scientific and medical disciplines are often interested in whether their hypotheses, translated into mathematical models, are compatible with available data. Model selection and hypothesis testing requires knowledge of parameter and variable values which are usually unavailable. Estimation of such parameters and hidden variables is a nonlinear optimization problem, which amounts to solving a system of polynomial equations. In this talk, we will present a systematic framework for determining if a mathematical model given by a polynomial system of first-order differential equations is compatible with limited data (i.e., unknown parameters or variables, and noisy data) using methods from numerical algebraic geometry. (Received January 19, 2016)