

1112-92-532

Nicolette Meshkat* (nmeskcat@scu.edu), **Heather Harrington** and **Kenneth Ho**. *Model rejection using differential algebra*.

A common problem in biological modeling is the issue of model selection/rejection. Model selection involves determining the most appropriate model for a process given observed data and a set of candidate models for the process generating that data. On the other hand, model rejection asks the question of which candidate models are incompatible with the observed data. We consider the model rejection problem by applying methods from differential algebra to obtain structural invariants known as input-output equations. Then, given time course data and estimates of higher order derivatives of the associated input/output variables, we determine the extent to which the data satisfies these input-output equations. We employ methods from statistics to obtain a criteria for model rejection and demonstrate this approach on some linear and nonlinear biological models. This is joint work with Heather Harrington and Kenneth Ho. (Received August 11, 2015)