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Jose Israel Rodriguez* (jo.ro@nd.edu), Dept of Applied and Computational Math, 146 Hayes-Healy, University of Notre Dame, Notre Dame, IN 46556, and **Xiaoxian Tang**. *Data discriminants of likelihood equations*.

Maximum likelihood estimation (MLE) is a fundamental computational problem in statistics. The goal is to maximize the likelihood function with respect to given data on a statistical model. The algebraic approach to this problem is to solve a very structured polynomial system called likelihood equations. For general choices of data, the number of complex solutions is finite and called the ML-degree of the model.

However, the number of real solutions is not characterized by the ML-degree. Instead, the number of real solutions is characterized by the data-discriminant of the model. In this talk, we investigate the data-discriminant of some statistical models to predict the number of real solutions to the likelihood equations for any choice of data. (Received September 03, 2014)