1064-62-110 **Sonja Petrovic*** (petrovic@math.uic.edu), Department of Mathematics, Statistics, and CS, 322 Science and Engineering Offices (M/C 249), 851 S. Morgan Street, Chicago, IL 60607-7045. *A computational challenge in algebraic statistics.*

Algebraic statistical models are real positive parts of algebraic varieties. Many of the fundamental questions about these models require heavy computation at the interface of statistics algebraic geometry.

Maximum likelihood estimation and parameter identifiability are two of the prominent problems in which algebraic methods have been effective. However, due to the size and complexity of the computations, numerical methods need to be used.

This talk will survey these problems for certain graphical models, and discuss the results of using numerical algebraic geometry to solve them. An important wealth of examples is provided by phylogenetic models in algebraic biology. (Received September 01, 2010)