

CRITICAL POINTS VIA MONODROMY AND NUMERICAL ALGEBRAIC GEOMETRY

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In statistics and other applications, we usually have data collected from an experiment or an observation, and we expect this data to follow a model. Many of these models can be interpreted as solutions to a polynomial system, and a fundamental problem is to find the point in the model that best explains the data. In statistics, this is the point that maximizes the Likelihood function.

It is usually a challenge to find solutions to a polynomial equation that are meaningful to the original problem in applications. A common approach is to relax the original problem to allow complex solutions, as in this cases, many algebraic methods can be used.

In this talk, I will introduce an algorithm that uses tools from Numerical Algebraic Geometry to find the critical points of a distance function, and discuss other implications concerning its real solutions.

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