

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Inference and analysis of gene-regulatory networks in the bacterium *B.subtilis*** CLAIRE CHRISTENSEN, Dept. of Physics, Penn State University, ANSHUMAN GUPTA, Dept. Chem. E., Penn State University, REKA ALBERT, Dept. of Physics, Penn State University, COSTAS MARANAS, Dept. Chem. E., Penn State University — We present the methods and results of a two-stage modeling process that generates candidate gene-regulatory networks of the bacterium *B.subtilis* from experimentally obtained, yet mathematically underdetermined microchip array data. By employing a computational, linear correlative procedure to generate these networks, and by analyzing the networks from a graph theoretical perspective, we are able to verify the biological viability of our simulated networks, and we demonstrate that our networks' graph theoretical properties are remarkably similar to those of other, more well-studied biological systems. We test the robustness of the inference process first by introducing noise into the experimental data, and then by comparing the graph theoretical properties of the resulting perturbed networks to those of the original networks.

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Date submitted: 03 Dec 2005

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