



The University of Chicago  
Department of Statistics

Master's Seminar

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**A Recursive Model Simulation with Discussion**

**FRIDAY, July 31, 2009, at 2:30 PM**  
**110 Eckhart Hall, 5734 S. University Avenue**

**ABSTRACT**

The NorthEast (NE) model is a spin system on the two-dimensional integer lattice that evolves according to the following rule: whenever a site's southernly and westerly nearest neighbors have spin 1, that site may reset its own spin by tossing a  $p$ -coin; at all other time its spin remains constant. Using the marked Poisson process construction of the model elaborated upon by Steven Lalley and George Kordzakhia in *Ergodicity and Mixing Properties of the NorthEast Model* we aim to simulate the process and its "influence region" in the  $\mathbb{Z}^2$  lattice of the first quadrant. Our simulations are done in two ways, in two languages: Python and R. The hope is that this code could be used and perhaps optimized even more later on so as to garner more information on the limiting behavior of the model and its influence region. Both the process and the "influence region" are simulated, and we also simulate processes associated with the classical NE model. Finally, some key conjectures, based on the simulations, are discussed.