Meeting: 1005, Newark, Delaware, SS 16A, Special Session on Probabilistic Paradigms in Combinatorics

1005-05-189 **Jeong H Kim*** (jehkim@microsoft.com), One Microsoft Way, Redmond, WA 98052, **Sung-Soon Choi** (sschoi@soar.snu.ac.kr), School of Computer Science and Engineering, Seoul National University, 151-742 Seoul, South Korea, and **Kyomin Jung** (kmjung@mit.edu), Departme of Mathematics, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139. *Phase Transitions in a random NK landscape Model and a random 3-SAT problem.*

We analyze the satisfiability problem of a certain random 3-SAT problem in which the appearances of 3-clauses are not independent. The random model is reduced directly from the solubility problem of a random NK landscape model with K=3. Proposed by Kauffman, the NK model is one of the most notable mathematical models to study the evolution on a fitness landscape, where a fitness landscape is a function that maps each genetic composition (genotype) to the fitness of the expression (phenotype) of the genetic composition in an environment. In the course of the analysis, we introduce a generalized random 2-SAT formula and show its phase transition phenomenon. (Received February 08, 2005)