1067-68-1936   **Damien Pitman*** (`damien.pitman@cortland.edu`), SUNY Cortland, Mathematics Department, PO Box 2000, Cortland, NY 13045. *Random 2-SAT Solution Components and a Fitness Landscape.*

We answer the following question: How many components are there in the subgraph of the discrete cube induced by the satisfying assignments to a random 2-SAT formula? We show that, for the probability range where formulas are likely to be satisfied, the random number of components converges weakly (in the number of variables) to a distribution determined by a Poisson random variable. The number of satisfying assignments or solutions is known to grow exponentially in the number of variables. Thus, our result implies that exponentially many solutions are organized into a stochastically bounded number of components. We also describe an application to biological evolution; in particular, to a type of fitness landscape where satisfying assignments represent viable genotypes and connectivity of genotypes is limited by single site mutations. The biological result is that, with probability approaching 1, each viable genotype is connected by single site mutations to an exponential number of other viable genotypes while the number of viable clusters is finite. (Received September 22, 2010)