1044-60-71 **Kyle Siegrist*** (`siegrist@math.uah.edu`), 258K Shelby Center, Department of Mathematical Sciences, University of Alabama in Huntsville, Huntsville, AL 35899. *Constant rate distributions on partially ordered sets.* Preliminary report.

The geometric distribution on $\mathbb{N}$ and the exponential distribution on $[0, \infty)$ both have the constant rate property: the upper probability function $F$ and the probability density function $f$ (with respect to counting measure in the first case and Lebesgue measure in the second) are related by $f = \alpha F$ for some $\alpha > 0$. Moreover, these distributions are the only ones (on $\mathbb{N}$ and $[0, \infty)$, respectively) with this property. The two distributions are the building blocks of other important distributions and random processes.

In this talk I will discuss probability distributions on general partially ordered sets that have the constant rate property. In spite the generality, and the lack of any other algebraic structure, a surprising amount of the theory stills goes through—constant rate distributions have nice moment properties and lead to "gamma" distributions and a "Poisson" process. In many respects, constant rate distributions describe the most random way to put points in the poset. Finally, I will discuss the characterization problem: when does a poset support constant rate distributions? (Received August 18, 2008)