1077-60-2208 **Vince Lyzinski*** (lyzinski@ams.jhu.edu), 306-B Whitehead Hall, Dept. of Applied Mathematics and Statistics, 3400 N. Charles St., Baltimore, MD 21218, and **Anant Godbole** (GODBOLEA@mail.etsu.edu), **Chang Mou Lim** (changmou@math.uchicago.edu) and **Nicholas George Triantafillou** (ngtriant@umich.edu). *Random Additive Bases and Mixed Sidon Sets.*

A set $\mathcal{A} \subseteq [n] \cup \{0\}$ is said to be a 2-additive basis for $[n]$ if each $j \in [n]$ can be written as $j = x + y, x, y \in \mathcal{A}, x \leq y$. If we pick each integer in $[n] \cup \{0\}$ independently with probability $p = p_n \to 0$, thus getting a random set $\mathcal{A}$, what is the probability that we have obtained a 2-additive basis? We can address this question using arithmetic modulo n, or, alter the question so that the target sum-set is $[\frac{n}{2}, \frac{3n}{2}]$ (or $[(1-\alpha)n, (1+\alpha)n]$ for some $0 < \alpha < 1$). Under either model, the Stein-Chen method of Poisson approximation is used to tease out a very sharp threshold for the emergence of a 2-additive basis. Generalizations to 3- and h-additive bases are then given. Finally, we define a class $B_{h,k}$ of Sidon-like sets and derive thresholds for the emergence of these, under the same probability model as before. We do this so as to motivate the notion of (h,k)-additive bases. (Received September 21, 2011)