1139-11-684 **tsz ho chan** (tchan@memphis.edu) and **máté wierdl*** (wierdlmate@gmail.com). *Random differences of arithmetic progressions in the primes.*

What kind of numbers can occur as differences of prime numbers? The twin prime conjecture says that there are infinitely many prime pairs p_1, p_2 so that the difference $p_1 - p_2$ is from the singleton $\{2\}$. Green, Tao and Ziegler prove that there are infinitely many prime pairs p_1, p_2 so that the difference $p_1 - p_2$ is a cube.

In this talk we are interested in possible difference sets for the primes which are randomly generated. The simplest example would be to generate this random set by repeatedly flipping a fair coin. But we will look at sets that are random versions of known sets of 0 density. For example, we get the set of "random squares" by taking the integer n into the random set with probability $\frac{1}{\sqrt{n}}$ or we get the set of "random cubes" by taking n into the random set with probability $\frac{1}{n^{2/3}}$.

We will discuss two generalizations: one, when we consider not the whole set of primes but positive density subsets of it, and two, when we look at not just differences between primes, but differences of three or longer term arithmetic progressions of primes.

As can be suspected, there are more questions than answers. (Received February 20, 2018)