1135-14-554 **Sean Howe*** (seanpkh@gmail.com). *Motivic random variables: Examples and applications.*

In algebraic geometry over finite fields, there are many natural statistics to investigate. For example, we could ask:

* How many points are there on a random smooth plane curve? Or,

* How many lines are there on a random smooth cubic surface?

The answer will typically differ depending on the finite field, but often has a uniform description using geometry: for example as the degree goes to infinity, the average number of points on a smooth plane curve over the finite field with q elements approaches q+1 – which is also the number of points on the projective line! Using the language of motivic random variables, we can give precise meaning to funny looking probabilistic statements like "the average smooth plane curve is the projective line," strengthening point counting statistics over finite fields. The same statements make sense over the complex numbers, where they can be interpreted using Hodge theory, and this leads to some surprising new connections – for example, between sieving theory and representation stability. In this talk we'll introduce the language of motivic random variables with some simple examples, then highlight some applications of the theory. (Received September 08, 2017)