1106-05-552 **Andrew V Sills*** (asills@georgiasouthern.edu) and **Yuriy Choliy**. *A formula for the partition function that "counts".*

Let $p(n)$ denote the number of partitions of the integer n. The first exact formula for $p(n)$ was published by Hardy and Ramanujan in 1918. Two decades later, Hans Rademacher improved the Hardy–Ramanujan formula to give an infinite series that converges rapidly to $p(n)$.

In 2011, Ken Ono and Jan Bruinier surprised the world by announcing a new formula which attains $p(n)$ by summing a finite number of complex numbers which arise in connection with the multiset of algebraic numbers that are the union of Galois orbits for the discriminant $-24n+ 1$ ring class field.

Thus despite the fact that $p(n)$ is a combinatorial function, the known formulas for it are by no means "combinatorial" in the sense that they involve summing a finite or infinite number of complex numbers to obtain the correct (positive integer) value.

In this talk, I will present a formula for the partition function as a multisum each term of which actually counts a certain class of partitions. A comparison with a quasipolynomial representation will be given, as will as an associated polynomial approximation which appears to attain a level of accuracy comparable to that of the initial term of the Hardy–Ramanujan–Rademacher series. (Received September 02, 2014)