1018-05-159 **Alexander Berkovich*** (alexb@math.ufl.edu), Department of Mathematics, University of Florida, Little Hall, Gainesville, FL 32611. *The BG-rank of a partition and its applications.* Preliminary report.

The partition statistics BG-rank is defined as an alternating sum of parities of parts of a partition. This statistic can be employed to generalize and refine the famous Ramanujan modulo 5 partition congruence. In this talk I outline an elegant combinatorial proof that $p_j(n) \equiv 0 \pmod 5$. Here $p_j(n)$ denotes a number of partitions of n with BG-rank$= j$.

I show that generating functions for the number of partitions of n that are odd t-cores can be written as certain sum of multi-theta functions. Remarkably, when BG-rank assumes extreme value these generating functions can be written as certain eta-quotients. This is a joint work with Frank G. Garvan. (Received March 04, 2006)