

1145-05-170

Acadia Larsen* (acadia.larsen01@utrgv.edu). *A Generalization of Partition Identities for First Differences of Partitions of n Into at most m Parts.*

We show for a prime power number of parts m that the first differences of partitions into at most m parts can be expressed as a non-negative linear combination of partitions into at most $m - 1$ parts. To show this relationship, we combine a quasipolynomial construction of $p(n, m)$ with a new partition identity for a finite number of parts. We prove these results by providing combinatorial interpretations of the quasipolynomial of $p(n, m)$ and the new partition identity. We extend these results by establishing conditions for when partitions of n with parts coming from a finite set A can be expressed as a non-negative linear combination of partitions with parts coming from a finite set B . (Received September 04, 2018)