

1154-11-39

George E. Andrews* (gea1@psu.edu), Department of Mathematics, McAllister Bldg., The Pennsylvania State University, University Park, PA 16802. *Separable Integer Partition (SIP) Classes.*

Three of the most classical and well-known identities in the theory of partitions concern: (1) the generating function for $p(n)$ (Euler); (2) the generating function for partitions into distinct parts (Euler), and (3) the generating function for partitions in which parts differ by at least 2 (Rogers-Ramanujan). The lovely, simple argument used to produce the relevant generating functions is mostly never seen again. Actually, there is a very general theorem here which we shall present. We then apply it to prove two familiar theorems; (1) Goellnitz-Gordon, and (2) Schur 1926. We also consider an example where the series representation for the partitions in question is new. We close with an application to "partitions with n copies of n ." (Received July 10, 2019)