1125-11-1035Andrew V. Sills* (asills@georgiasouthern.edu), asills@georgiasouthern.edu.Rogers-Ramanujan type partition identities.Preliminary report.

The partition theoretic Rogers-Ramanujan identities assert that for a = 0, 1 and any n, the number of partitions of n into parts greater than a that mutually differ by at least 2 equals the number of partitions of n into parts congruent to $\pm(a+1) \pmod{5}$. A Rogers-Ramanujan type partition identity asserts the equality, for all n, of two classes of restricted partitions where in one class, the parts are restricted to certain arithmetic progressions with a fixed modulus, and in the other class parts must satisfy some (possibly quite complicated) difference conditions and initial conditions. Many examples of RR type partition identities, including many infinite families, are now known. In the 1940's Derek Lehmer and Henry Alder proved the nonexistence of certain a priori plausible families of RR type partition identities. Despite numerous advances over the past half-century by Andrews, Gordon, and others, an overarching theory of why certain identities exist and why others are impossible, remains elusive. In this talk, I will share some observations of what I believe to be previously unnoticed features of known RR type partition identities in the hope that this may move us a step closer to a general understanding of such identities. (Received September 20, 2016)