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Sharon Anne Garthwaite* (sag028@bucknell.edu), 1 Dent Dr, Lewisburg, PA 17837-2005,
and **Marie Jameson**. *Narrowing the search for beauty: Incongruence properties for generalized
Frobenius partitions.*

Let $p(n)$ denote that partition counting function, that is, the number of ways to express n as the sum of non-increasing positive integers. Ramanujan discovered and proved surprising congruence properties for $p(n)$, such as $p(5n + 4) \equiv 0 \pmod{5}$. Over the last century, many other examples of congruences for the partition function and other counting functions have been proved. In this talk we narrow the search for when such congruences occur – for example, why $p(5n + 4)$ and not $p(5n + 3)$? – using the theory of automorphic forms. We build on work by C.-S. Radu, S. Ahlgren, B. Kim, N. Andersen, and S. Löbrich that employs the q -expansion principle of P. Deligne and M. Rapoport. We focus on generalized Frobenius partitions to demonstrate this method. This talk aims to be accessible and does not assume familiarity with automorphic form theory. (Received January 16, 2020)