1173-11-182 **Scott Ahlgren** and **Olivia Beckwith***, obeckwith@tulane.edu, and **Martin Raum**. *Scarcity of congruences for the partition function.* Preliminary report.

The arithmetic properties of the ordinary partition function $p(n)$ have been the topic of intensive study ever since Ramanujan proved that for all integers n , $p(24n+t) \equiv 0 \pmod{Q}$ for the primes $Q = 5, 7, 11$, where $24t \equiv 1 \pmod{Q}$. Today it is known that, there are many congruences of the form $p(Qmn+t) \equiv 0 \pmod{Q}$ where Q is prime and $m \geq 5$. Here we prove that such congruences are scarce when m is prime unless a certain nonzero cusp form has an unexpectedly large number of coefficients which are divisible by Q. The proofs rely on a variety of tools from the theory of modular forms and analytic number theory. This is joint work with Scott Ahlgren and Martin Raum. I will also briefly discuss an investigation with Jack Chen, Maddie Diluia, Oscar Gonzalez, and Jamie Su, in which we observe that there appear to be infinitely many congruences of this form for the colored partition functions. (Received September 20, 2021)