

ALGEBRA AND NUMBER THEORY  
SEMINAR

*The partition function modulo prime powers*

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**Abstract:** Recently, Folsom, Kent, and Ono discovered surprising general arithmetic properties of values of  $p(n)$ , the ordinary partition function, modulo prime powers. More precisely, let  $l > 3$  be prime, and let  $m$  be a positive integer. Their work implies systematic linear relations modulo  $l^m$  among values of  $p(n)$  in certain arithmetic progressions modulo  $l^b$  for all odd  $b > b(l, m)$ , a constant depending on  $l$  and  $m$ .

In this talk, we prove a refined upper bound on  $b(l, m)$ . Our bound is sharp in all computed cases. Abstractly,  $b(l, m)$  measures the stabilization rate of a certain sequence of modules of modular forms with coefficients reduced modulo  $l^m$ . To define these modules, Folsom, Kent, and Ono introduce a new operator,  $D(l)$ . We obtain our bound by carefully studying how  $D(l)$  effects filtrations of the relevant modular forms.

This is joint work with John Webb.

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MATHEMATICS AND COMPUTER SCIENCE  
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