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**Timothy P Kilbourn\*** (tkilbour@math.uiuc.edu). *The distribution of powers of the partition function modulo  $\ell^j$ .*

Newman conjectured in 1960 that the partition function  $p(n)$  takes values in each residue class modulo  $\ell^j$  for a prime  $\ell$  infinitely often. This may be viewed as a special case of more general questions about the distribution of coefficients of half-integral weight modular forms mod  $\ell^j$ . We will prove an analogue of Newman's conjecture for powers of the generating function for  $p(n)$ . The proof also uses techniques from work of Serre and Swinnerton-Dyer on modular forms mod  $p$ . (Received September 06, 2006)