

1145-11-2594      **Eric M Jovinelly\*** (ejovinel@nd.edu). *Primes and Perfect Powers in the Catalan Triangle.*

The Catalan triangle is an infinite lower-triangular matrix that generalizes the Catalan numbers. The entries of the Catalan triangle, denoted by  $c_{n,k}$ , count the number of shortest lattice paths from  $(0,0)$  to  $(n,k)$  that do not go above the main diagonal. This talk concerns the occurrence of primes and perfect powers in the Catalan triangle. We prove that no prime powers except 2, 5, 9, and 27 appear in the Catalan triangle when  $k \geq 2$ . We further prove that  $c_{n,k}$  are not perfect semiprime powers when  $k \geq 3$ . Finally, we prove that aside from perfect squares when  $k = 2$ , there are at most finitely many perfect powers among  $c_{n,k}$  when  $k \geq 2$ . Part of the last result depends on the *abc* conjecture. (Received September 25, 2018)