1014-05-360   **Nicholas A. Loehr*** (`nick@math.wm.edu`), Department of Mathematics, College of William and Mary, Williamsburg, VA 23187, and **Mahir B. Can** and **Gregory S. Warrington**. *The q,t-Catalan theorem and the q,t-Square theorem.*

This talk gives an overview of the two theorems featured in the title. The "q,t-Catalan theorem" is one of the crowning achievements of more than a decade of research on diagonal harmonics by Mark Haiman, Jim Haglund, Adriano Garsia, and others. The "q,t-square theorem" is a more recent development that is joint work with Greg Warrington and Mahir Can. These theorems give a surprising unification of seemingly unrelated concepts in various areas: word combinatorics, lattice path combinatorics, representation theory, algebraic geometry, symmetric functions, partition theory, and Macdonald polynomials. (Received September 12, 2005)