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Emily Sergel* (esergel@math.upenn.edu). *On C -expansions for monomial symmetric functions.*

In 2005, Haglund, Haiman, Loehr, Remmel and Ulyanov first stated the Shuffle Conjecture, which gives a combinatorial interpretation for the Frobenius character of the module of Diagonal Harmonics in terms of parking functions. A key ingredient in Carlsson and Mellit's recent proof (2015) was the Compositional Shuffle Conjecture of Haglund, Morse, and Zabrocki (2012). This refinement revealed that certain plethystic operators, referred to here as C -operators, together with the ∇ operator of Bergeron and Garsia (1999), act as building blocks for parking functions.

More precisely, if a symmetric function f has a positive expansion in terms of these C -operators applied to 1 , then we automatically get a positive combinatorial interpretation for ∇f in terms of parking functions, which in turn give LLT polynomials. Unfortunately, this expansion is not unique. Here we give a positive, combinatorial expansion for any hook monomial symmetric function. Our expansion is closely related to Kulikaukas and Remmel's (2006) expansion for monomials into homogeneous symmetric functions, and we conjecture that similar expansions exist for non-hook shapes. (Received February 08, 2018)