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Mark D Haiman*, Department of Mathematics, 970 Evans Hall, University of California, Berkeley, CA 94720-3840, and **Li-Chung Chen**. *k-Schur functions, graded S_n modules, and the flag variety*. Preliminary report.

I'll give an overview of some conjectures of mine, and some theorems and conjectures of my student Li-Chung Chen, which lead to several (conjecturally equivalent) descriptions for a family of q -symmetric functions which we conjecture to include the k -Schur functions of Lascoux, Lapointe and Morse. One description is representation-theoretic, a second is combinatorial, and the third is an explicit formula which comes from a geometric interpretation. The package of conjectures offers a possible explanation for the various positivity properties that k -Schur functions are expected to satisfy. (Received February 06, 2009)