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Catalan polynomials and k -Schur functions.

Li-Chung Chen and Mark Haiman studied a family of symmetric functions indexed by pairs consisting of a partition contained in the staircase $(n-1, \dots, 1, 0)$ (of which there are Catalan many) and a weight in \mathbb{Z}^n . These *Catalan polynomials* include the Hall-Littlewood polynomials and their parabolic generalizations and can be viewed as GL_n -equivariant Euler characteristics of vector bundles on the flag variety. Chen-Haiman conjectured that the k -Schur functions are a subclass of Catalan polynomials. We settle their conjecture and deduce several exciting consequences. (Received February 17, 2018)