

1039-05-98

**Francois Descouens\*** ([francois.descouens@univ-mlv.fr](mailto:francois.descouens@univ-mlv.fr)), Fields Institute, 222 College Street, Toronto, ON M5T 3J1, Canada, **Nantel Bergeron** ([bergeron@mathstat.yorku.ca](mailto:bergeron@mathstat.yorku.ca)), Department of Mathematics and Statistics, 2029 TEL Building, York University, Toronto, ON M3J 1P3, Canada, and **Mike Zabrocki** ([zabrocki@mathstat.yorku.ca](mailto:zabrocki@mathstat.yorku.ca)), Department of Mathematics and Statistics, 2028 TEL Building, York University, Toronto, ON M3J 1P3, Canada. *Generalization of  $(q, t)$ -Catalan numbers.*

We define new filtrations of the usual  $(q, t)$ -Catalan numbers by computing the image of certain  $k$ -Schur functions by the operator  $\nabla$  of F. Bergeron and al. In some particular cases, we give a combinatorial interpretation of these new polynomials in terms of nested Dyck paths. We also give and prove a combinatorial interpretation at  $t = 1$ . More generally, we give a conjecture of positivity (up to a global sign) of  $\nabla$  applied on any  $k$ -Schur function. (Received March 07, 2008)