

Algebraic Combinatorics meets Inverse Systems

January 19-21, 2007

## A Noncommutative Combinatorial Inverse System

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### **Abstract**

In previous years, (with C. Reutenauer, M. Rosas and M. Zabrocki) we have investigated  $\text{NCSym}$ , the invariant of the symmetric group in  $n$  non-commuting variables. We calculated the quotient of the free algebra by the one-sided ideal generated by  $\text{NCSym}$  and found an analogue of Chevalley's theorem. M. Zabrocki and M. Rosas computed the Frobenius graded character of this quotient.

This year, I present the work with H. Li on the quotient by the two-sided ideal generated by  $\text{NCSym}$ . This seems a more natural setting for combinatorial inverse system with beautiful results and lots of open problems.