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Nicolas M. Thiéry* (Nicolas.Thiery@u-psud.fr). *Implementing Algebraic Combinatorics
Some feedback from the development of MuPAD-Combinat.*

MuPAD-Combinat is an open-source algebraic combinatorics package for the computer algebra system MuPAD. Its main purpose is to provide an extensible toolbox for computer exploration, and to foster code sharing between researchers in this area. The development started in 2001, and it now contains functions to deal with most usual combinatorial classes (partitions, tableaux, decomposable classes, ...). It also supplies the user with tools for constructing new combinatorial classes and combinatorial (Hopf) algebras. As an application, it provides well-known combinatorial Hopf algebras like the algebra of symmetric functions and many generalizations. There is also experimental support for combinatorial Lie algebras, operads, (affine) Weyl groups, crystals, Schubert polynomials, invariant rings, ... Altogether, MuPAD-Combinat played a central role in 25+ publications with more than a dozen contributors.

In this talk, we first demonstrate the main functionalities of the package and present some typical applications. Based on that, we discuss its design, successes and flaws, and its future.

Feel free to contact the speaker if you would like to get some first hand experience through an informal tutorial, and bring your laptop if you have one! (Received September 21, 2007)