Johannes Kepler Universität Linz
SpezialForschungsBereich F013
Numerical and Symbolic Scientific Computing

SFB-Talk announcement

Prof. Ronald C. King
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"Invariant theory and qubits, and the hive model of Littlewood-Richardson coefficients"

Abstract:

If time permits, this talk will be concerned with two unrelated combinatorial problems that each require both algebraic insight and some computational expertise.

Part I. Many physical systems involve some symmetry. This is often made manifest in the invariance of quantities of physical interest with respect to a group of linear transformations. Here we shall discuss some general aspects of invariant theory and then review their application to qubit systems, enumerating the numbers and degrees of local invariants in various models and illustrating the role of syzygies in revealing the full structure of the ring of invariants.

Part II. Schur functions specified by partitions provide a convenient orthonormal basis of the ring of symmetric functions. The decomposition of their product involves Littlewood-Richardson coefficients. If the partitions labelling these coefficients are scaled, then the resulting stretched Littlewwod-Richardson coefficients are known to be polynomial in the scaling parameter. Here a hive model is introduced for evaluating Littlewood-Richardson coefficients. A review of its implications for the properties of the corresponding polynomials will be given, including illustrative examples.

Everybody is kindly invited to take part!
Prof. Peter Paule

Wednesday, April 2, 2008, 4:00 pm
RISC Seminar Room, RISC, Hagenberg

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