1048-05-323 **Peter Paule*** (ppaule@risc.uni-linz.ac.at), Research Institute for Symbolic Computation, (RISC), Johannes Kepler University Linz, A-4040 Linz, Austria. *Broken Diamonds and Partition Congruences.*

The talk begins with partition explorations made possible by Omega, the computer algebra implementation of MacMahon's Partition Analysis developed jointly with G.E. Andrews and A. Riese. Special focus will be put on directed graphs made up of chains of generalized hexagons. From generating functions of such objects one can build infinite families of modular forms giving rise to partition congruences conjectured by G.E. Andrews and the speaker. Proofs have been delivered by M.D. Hirschhorn and J.A. Sellers, and by S.H. Chan. The talk reports on recent work of S. Radu who with the help of computer algebra was able to discover and to prove additional congruence relations. (Received February 10, 2009)