1009-05-225 **Li Guo*** (`liguo@newark.rutgers.edu`), Dept of Math & Comp Sci, Rutgers University, Newark, Newark, NJ 07102. *Combinatorics of Rota-Baxter algebras.*

Rota-Baxter algebra was introduced by the mathematician Glenn Baxter but is also related to the Yang-Baxter equation named after the physicists. Its combinatorial and algebraic study was started by Rota the 1960s and has since found applications in many areas of mathematics and physics. We will discuss its combinatorial connections, including the early works of Rota and Cartier relating free commutative Rota-Baxter algebras and symmetric functions and more recent results relating Rota-Baxter algebras to Stirling numbers, Catalan numbers and Hopf algebras of rooted trees which also occurred in quantum field theory. (Received August 22, 2005)