1022-05-90 **Walter Moreira*** (wmoreira@math.tamu.edu), Department of Mathematics, TAMU 3368, College Station, TX 77843, and **Marcelo Aguiar**. *Combinatorics of the Free Baxter Algebra.*

We study the free (associative, non-commutative) Baxter algebra on one generator. The first explicit description of this object is due to Ebrahimi-Fard and Guo. We provide an alternative description in terms of a certain class of trees, which form a linear basis for this algebra. We use this to treat other related cases, particularly that in which the Baxter map is required to be quasi-idempotent, in a unified manner. In several cases, we provide bijections between our various classes of trees and more familiar combinatorial objects including certain Schröder paths and Motzkin paths. We calculate the dimensions of the homogeneous components of these algebras (with respect to a bidegree related to the number of nodes and the number of angles in the trees) and the corresponding generating series. (Received September 10, 2006)