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Supercharacter theory and the combinatorics of unipotent groups.

Supercharacter theory has given us a combinatorial insight into the representation theory of the finite group of unipotent upper-triangular matrices U – a group whose usual character theory is provably “unknowable.” Mimicking the powerful tableau combinatorics of the symmetric group, the supercharacter theory of U replaces partitions with set-partitions (or q -analogues of set partitions). This talk will discuss the basic axioms of a supercharacter theory, and explore some of the combinatorial and representation theoretic possibilities of such a theory. (Received February 04, 2008)