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Nathaniel Thiem* (thiemn@colorado.edu). *Superclass walks on unipotent polytopes*. Preliminary report.

One of the nice applications of combinatorial representation theory is the use of characters in bounding mixing times of random walks. This talk examines a family of random walks coming from finite unipotent groups that are in fact walks on a family of polytopes (including hypercubes, and generalizations of both transportation and Birkhoff polytopes). I will introduce these walks, the underlying representation theory, and their associated combinatorics with a particular emphasis on the polytopes built out of placements of non-attacking rooks. (Received September 12, 2017)