1116-05-2565 **Emma Cohen**, **Dhruv Mubayi**, **Peter Ralli** and **Prasad V Tetali***, Georgia Institute of Technology, Atlanta, GA 30332-0160. *Inverse Expander Mixing for Hypergraphs.*

Extensions of the powerful theory of quasirandomness in graphs to hypergraphs has motivated the study of the so-called expander mixing lemma and its converse, often referred to as an "inverse mixing lemma. These lemmas capture the role played by the eigenvalues of adjacency operators in quantifying quasirandomness. We formulate and prove inverse mixing lemmas in the settings of simplicial complexes and (k-uniform) hypergraphs, for $k \geq 3$. In the hypergraph setting, we extend results of Bilu and Linial for graphs. In the simplicial complex setting, our results answer a question of Parzanchevski et al. (Received September 22, 2015)