1127-05-107   **David E Speyer*** (`speyer@umich.edu`), 530 Church Street, Ann Arbor, MI 48109-1043, and **Robert Kleinberg** and **Will Sawin**. *Large colored sum-free sets meeting the Ellenberg and Gijswijt upper bounds.*

Let A be an abelian group. A colored sum-free set in A is a list (a_1, b_1, c_1), (a_2, b_2, c_2), ..., (a_N, b_N, c_N) of triples of elements of A such that $a_i + b_j + c_k = 0$ if and only if $i = j = k$. Extremal combinatorialists aim to construct large colored sum-free sets, both because it is fun and because it has applications in the construction of fast matrix multiplication algorithms. Until May of 2016, the best upper bounds on colored sum-free sets were of the form $A^{(}1 - o(1))$. Then Ellenberg and Gijswijt, building on work of Croot, Lev and Pach, proved bounds on colored sum-free sets in $(\mathbb{Z}/p\mathbb{Z})^k$ of the form p^{ck} for $c < 1$. We will present probabilistic constructions of sum-free sets of size $p^{(c-o(1))k}$, for the same c as in the Ellenberg-Gisjwijt bounds. (Received January 26, 2017)

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