



Mathematics and CS Seminar

Random Cayley graphs

Jonathan Hermon (University of Cambridge)

Host: M. Beiglboeck, N. Berestycki, L. Erdoes, J. Maas

We consider the random Cayley graph of a finite group G formed by picking k random generators uniformly at random:

(1) We prove universality of cutoff (for the random walk) and a concentration of measure phenomenon in the Abelian setup (namely, that all but $o(|G|)$ elements lie at distance $\in [R - o(R), R + o(R)]$ from the origin, where R is the minimal ball in \mathbb{Z}^k of size at least $|G|$), provided $k \gg 1$ is large in terms of $\text{rank}(G)$. As conjectured by Aldous and Diaconis, the cutoff time is independent of the algebraic structure (it is given by the time at which the entropy of a random walk on \mathbb{Z}^k is $\log |G|$).

(2) We prove analogous results for the Heisenberg $H_{p,d}$ groups of $d \times d$ uni-upper triangular matrices with entries defined mod p , for p prime and d fixed or diverging slowly (as $p \rightarrow \infty$).

(3) Lastly, we resolve a conjecture of D. Wilson that if G is a group of size at most 2^d then for all k its mixing time in this model is as rapid as that of \mathbb{Z}_2^d and likewise, that the slowest mixing p -group of a given size is \mathbb{Z}_p^d .

(Joint work with Sam Thomas.)

Thursday, October 3, 2019 at 03:30pm
University of Vienna, SR 12, 2. OG, OMP 1



This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage (note that the IST Shuttle times are highlighted in dark green):
https://ist.ac.at/wp-content/uploads/2019/03/IST_Shuttle_Bus_timetable.pdf
The IST Shuttle bus is marked IST Shuttle and has the Institute Logo printed on the side.