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Higher rank groups have fixed price one

Cost is a fundamental invariant in measured group theory, generalising the notion of "rank" (in the sense of the minimum number of generators for a group). A group is said to have "fixed price" if all of its actions have the same cost. In recent work, we have been able to show that "higher rank" groups (such as $SL_3(\mathbb{R})$ and $\text{Aut}(T) \times \text{Aut}(T)$) have fixed price one. This implies, for instance, that lattices in $SL_3(\mathbb{R})$ admit generating sets of size little-o of their covolume, resolving a conjecture of Abert-Gelander-Nikolov. It also implies state of the art vanishing results for mod- p Betti numbers. A key ingredient in the argument is analysis of a new object from probability theory, the "Ideal Poisson-Voronoi tessellation" (IPVT). In higher rank, this object has truly bizarre properties.

I will give an overview of cost and sketch the structure of the argument. No prior familiarity with cost or the requisite probability theory will be assumed.

Joint work with Mikolaj Fraczyk and Amanda Wilkens.