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Quantitative weak uniform discreteness

I will discuss a quantitative variant of the classical Kazhdan-Margulis theorem generalized to probability measure preserving actions of semisimple groups over local fields. More precisely, the probability that the stabilizer of a random point admits a non-trivial intersection with a small r-neighborhood of the identity is at most br^d, for some explicit constants $b, d > 0$ depending only on the semisimple group in question. Our proof involves some of the original ideas of Kazhdan and Margulis, combined with methods of Margulis functions as well as (C, α)-good functions on varieties. As an application, we present a new unified proof of the fact that all lattices in these groups are weakly cocompact, i.e admit a spectral gap. The talk is based on a preprint joint with Gelander and Margulis.