

- ▶ EMMANUEL BREUILLARD, *Approximate groups*.
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Approximate groups were introduced by Terence Tao a few years ago in order to describe finite subsets A of an ambient group whose product set AA is not much larger than A . A large literature exists on the problem in abelian groups, and only recently did people start to investigate thoroughly the non-commutative case. A major question, the “non-commutative Freiman problem”, consists in describing the rough structure of such sets. Recently Ehud Hrushovski made important progress in this area bringing tools from model theory and algebraic groups. In this talk, I will describe some recent work joint with Ben Green and Terence Tao in which we refine part of Hrushovski’s work, giving explicit bounds, and present some applications of this result to various questions in group theory.

[1] E. BREUILLARD, *Approximate groups: a very brief introduction, notes from a mini-course*, to be found at <http://www.math.u-psud.fr/~breuilla/cour.html>

[2] E. BREUILLARD, B. GREEN, T.TAO, *Approximate subgroups of linear groups*, *arXiv preprint*, arXiv:1005.1881

[3] E. HRUSHOVKI, *Stable group theory and approximate subgroups*, *arXiv preprint*, arXiv:0909.2190