

Growth in linear groups

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Let S be a finite symmetric subset of $GL(n, F)$, F an arbitrary field, satisfying $|S^3| < K|S|$ for some $K > 1$.

Then there are normal subgroups $P \triangleleft G$ of $\langle S \rangle$, such that G/P is soluble, P is a finite perfect group contained in S^6 and S is contained in the union of $K^{c(n)}$ cosets of G , where $c(n)$ depends only on n .

This includes the Product Theorem for finite simple groups of bounded rank proved by Breuillard-Green-Tao and Pyber-Szabo' and various other earlier results.