

Growth in finite simple groups

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<https://functor.network/user/3333/entry/1995>

This post continues my series on favorite theorems of the twenty-first century. For an overview of the categories and earlier selections, see this post.

My choice for 2005 in Algebra is Harald Helfgott’s theorem on growth and diameter in the groups $\mathrm{SL}_2(\mathbf{F}_p)$ and $\mathrm{PSL}_2(\mathbf{F}_p)$. The preprint was posted in September 2005 and the paper was received by the *Annals of Mathematics* later that year; it was eventually published in 2008 (Helfgott 2008).

I have already blogged about this theorem - it is Theorem 1 in this previous post, so I refer the reader there for further details.

References

Helfgott, Harald A. 2008. “Growth and Generation in $\mathrm{SL}_2(\mathbb{Z}/p\mathbb{Z})$.” *Annals of Mathematics* 167 (2): 601–23. <https://doi.org/10.4007/annals.2008.167.601>.