

Institut für Diskrete Mathematik

**Combinatorics Seminar (Irregular Time)**

Friday 12th April 13:30

Online meeting (Webex)

**Improved bounds for Szemerédi's theorem**

ASHWIN SAH

(MIT)

Let  $r_k(N)$  denote the size of the largest subset of  $[N] = \{1, \dots, N\}$  with no  $k$ -term arithmetic progression. We show that for  $k \geq 5$ , there exists  $c_k > 0$  such that

$$r_k(N) \ll N \exp(-(\log \log N)^{c_k}).$$

Our proof is a consequence of recent quasipolynomial bounds on the inverse theorem for the Gowers  $U^k$ -norm as well as the density increment strategy of Heath-Brown and Szemerédi as reformulated by Green and Tao.

Meeting link:

<https://tugraz.webex.com/tugraz/j.php?MTID=m8500c46344212abf0fa37925da5ef9bf>

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