

# ADDITIVE COMBINATORICS

Moscow Institute of Physics and Technology (National Research University)

Degree or qualification is awarded: **PhD (Candidate of Science)**

Language of study: **English**

Mode of study: **full-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **375 000 RUB**

Programme webpage at the university website: <https://eng.mipt.ru/programs/additive-combinatorics/>

Programme curator: **Denis Ustyuzhaninov**

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## Entry requirements:

- Master's degree / equivalent in a related field
- B2 level of English
- Good track record of publications related to the topic of the intended research
- Strong research proposal 1,500 - 3,500 words

## Research supervisor:

[Ilya Shkredov](#)

PhD, DSc

## Supervisor's research interests:

- Additive Combinatorics.
- Number Theory.
- Combinatorial Ergodic Theory.

We study various classical themes of Additive Combinatorics, the sum-product phenomenon, applications to Number Theory, Dynamical Systems, Computer Science, Classical Analysis, Growth in Groups and other mathematical fields.

## Research highlights:

It will be a close contact with the mathematical community of Steklov Mathematical Inst., IPPI RAN, MSU and MIPT of course. Financial support of postdoctoral students is possible as well.

## Supervisor's specific requirements:

- Mathematical papers in AC, NT or connected fields which use the methods or results of AC/NT.
- Background in Additive Combinatorics.
- Strong desire to do research.

## Main publications:

- Shkredov, Ilya D. "On a problem of Gowers." *Izvestiya: Mathematics* 70.2 (2006): 385-425.
- Roche-Newton, Oliver, Misha Rudnev, and Ilya D. Shkredov. "New sum-product type estimates over finite fields." *Advances in Mathematics* 293 (2016): 589-605.
- Schoen, Tomasz, and Ilya D. Shkredov. "Roth's theorem in many variables." *Israel Journal of Mathematics* 199.1 (2014): 287-308.
- Konyagin, S.V., and I.D. Shkredov. "On sum sets of sets having small product set." *Proceedings of the Steklov Institute of Mathematics* 290.1 (2015): 288-299.

## **Specializations within this programme**