ASYMPTOTICAL PROPERTIES OF RANDOM STRUCTURES

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 curator: **Denis Ustyuzhaninov** Tel.: **+7 (498) 713 91 70** E-mail: <u>interadmission@phystech.edu</u>

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:

Maksim Zhukovskii PhD, DSc

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

Supervisor's research interests:

Logical limit laws, distribution of subgraphs in random graphs, percolation in graphs and random graphs, subgraphsaturation and weak saturation, logical complexity of graph properties and expressibility of first order and second order logics.

Research highlights:

Collaboration with international researchers.

Supervisor's specific requirements:

• PhD student should be familiar with basic notions and facts of calculus, combinatorics (in particular, graph theory), probability and stochastic processes.

Main publications:

- M.E. Zhukovskii, On the zero-one k-law extensions, European J. of Combinatorics, 60(2017):66-81.
- L.B. Ostrovsky, M.E. Zhukovskii, Monadic secondorder properties of very sparse random graphs, Annals of pure and applied logic, 2017, Vol. 168, pp. 2087-2101.
- A. Kupavskii, M. Zhukovskii, Short monadic second order sentences about sparse random graphs, SIAM J Disc Math, 2018, Vol. 32, No. 4, P. 2916-2940.
- O. Verbitsky, M. Zhukovskii, Tight bounds on the asymptotic descriptive complexity of subgraph isomorphism, ACM Transactions on Computational Logic, Volume 20, Issue 2, 2019.
- S.N. Popova, M.E. Zhukovskii, Existential monadic second order logic of undirected graphs: a disproof of the Le

Specializations within this programme