

# ULTRACOLD RYDBERG ATOMS AND ULTRACOLD PLASMA

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/ultracold-rydberg-atoms-and-ultracold-plasma/>

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:

[Boris Zelener](#)

PhD, DSc

## Supervisor's research interests:

Quantum optics, lasers cooling, magneto-optical trap, non-linear coherent effects, strongly coupled plasma, Rydberg atoms, atomic physics, laser physics, field and matter interaction physics, numerical simulations of physical processes, method Monte-Carlo and molecular dynamics.

Research highlights: The investigation will use unique equipment that meets the best international standards in ultracold atoms experiments. The laboratory actively interacts with foreign scientists and research centers, including Princeton University. Laboratory graduate students receive a scholarship.

## Supervisor's specific requirements:

The applicant must know quantum physics, quantum optics, laser physics, plasma physics, higher mathematics and programming.

## Main publications:

- Bobrov A. A., Physics of Plasmas, 27(1), 010701. (2020).
- Bobrov A. A., Physics of Plasmas, 26(8), 082102. (2019).
- Zelener, B. B., JETP Letters, 110(12), 761-765. (2019).
- Sautenkov, V.A., Optics Communications, 431, pp. 131-135. (2019).
- Sautenkov, V.A., Journal of the Optical Society of America B: Optical Physics, 35 (7), pp. 1546-1551. (2018).
- Butlitsky, M.A., Journal of Chemical Physics, 141 (2), 024511. (2014).
- Zelener, B.B., JETP Letters, 98 (11), pp. 670-674. (2014).
- Zelener, B.B., JETP Letters, 100 (6), pp. 366-370. (2014).

## **Specializations within this programme**