

## **14.03.02 Nuclear Physics and Engineering**

### **Particle Physics and Cosmology**

#### **Program objectives:**

- possess knowledge in the foundations of nuclear physics, particle physics, and cosmology;
- conduct research on improvement of the experimental techniques in the field of nuclear and particle physics;
- prepare and carry out experiments; analyze and interpret their results;
- solve fundamental problems of astrophysics, cosmology and particle physics, connected with the description of the early Universe, dark matter, dark energy, etc.

#### **Program curriculum**

more than 60 courses

- fundamental training in physics and mathematics;
- basic theoretical and practical grounding in nuclear and particle physics.

#### **Training directions:**

*accelerator experiments* (e.g., at the Large Hadron Collider) – experimental techniques, particle detectors, electronics, and methods of measurements, as well as methods for computer-aided processing and analysis of experimental data

*cosmology* – fundamentals of the relativistic quantum mechanics, astrophysics and cosmology

#### **Alumni professional activity**

- research work in basic particle physics and cosmology
- preparation and carrying out particle physics experiments (creation and use of particle and radiation detectors)
- experimental data analysis
- theoretical predictions and interpretation of experiments in high-energy physics (experiments at accelerators and in astrophysics)