Moscow Institute of Physics and Technology

Laboratory of high energy physics

Tagir Aushev (MIPT)

Moscow Institute of Physics and Technology

MIPT or also known as **PhysTech**

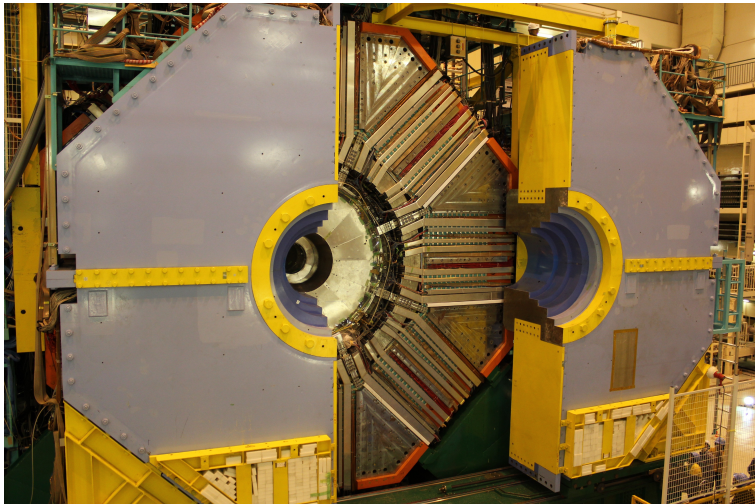
- Founded in 1946 as a faculty of Moscow State University by Lev Landau and Peter Kapitza (later Nobel prize laureates)
- In 1951 became an independent institute
- In the history of PhysTech there are 8 professors and 2 graduated Nobel prize laureates

- PhysTech is stably in the top-3 of the best Universities in Russia
- About 7000 students and 1200 staff members
- Many PhysTech graduates are working at JINR

Laboratory of high energy physics

- Main focus on the high energy physics experiments:
  - Belle and Belle II experiments in KEK, Japan (since 2014)
  - CMS at CERN (since 2015)
- The core of the group is from the Belle experiment (since 1999):
  - our staff are co-conveners of two of the major physics groups in Belle:
    * ICPV: world best measurement of sin2β
    * Y(5S): 4-quark states discovery $Z_b^+(10610)$, $Z_b^+(10650)$, …
  - B–physics, heavy flavor, open charm, charmonium and bottomonium spectroscopies, exotic states…

- For Belle II – together with LPI designed, developed, assembled and supporting the end-cap sub-detector for K^0_L & muon detection based on the scintillator strips and SiPM



LHEP@MIPT structure

Tagir Aushev (head of the lab)

Belle(II)
Dr. Galina Pakhlova
Dr. Roman Mizuk
Dr. Timofei Uglov
Vitaly Popov (Ph.D)
Ivan Pavelkin (Ph.D)

GRID
11 kHS06
1 PB storage

Theory
Dr. Emil Akhmedov
+17 students

CMS
Ivan Lilienberg
+ 4 students

NICA
Dr. Alex Nozik
(modeling)
+2 Ph.D students

Andrey Onischenko
(theory)

Prof. Alex Drozdov
(modeling and
design of special
computer systems
architecture)

GRID
shared usage

Potential contributions to MPD & BM@N

- **Data analyses**:
  - physics data, slow control data, etc.
- **Theoretical physics:**
  - relevant to NICA phenomenology
- **Monte-Carlo modelling:**
  - GEANT4, FLUKA, CORSIKA and other packages
- **Hardware**:
  - partnership with a very strong group working in the microelectronics area
  - can design the specialized processing (for slow control, low level triggering, etc.) using FPGA or similar chips
- **Computing:**
  - GRID computing cluster is being built in MIPT for MC production and data processing for Belle & Belle II experiments
    - 11 kHepSPEC and 1 PB of data storage
    - can be shared with MPD & BM@N needs
- **Education** of the students, who plan/work in the experiments:
  - MIPT is the main source of students for high energy experiments
  - currently, our lab is preparing to launch the master course of particle physics at MIPT