Particles and Cosmology

16th Baksan School on Astroparticle Physics

P r o g r a m

Terskol, Kabardino-Balkaria, Russian Federation

10-18 April 2019

Wednesday April 10

Arrivals

19:00 Welcome dinner

Thursday April 11

8:45 Opening

9:10 A. Blondel, Modern methods of neutrino detection (Lecture 1)

10:00 Coffee

10:20 A. Blondel, Modern methods of neutrino detection (Lecture 2)

11:10 O. Kalashev, Machine learning in astroparticle physics (Lecture 1)

12:00 Lunch and mountains

16:30 Coffee

16:50 Yu. Kudenko, Neutrino oscillations: experimental review (Lecture)

17:40 Neutrino discussion (A. Blondel, Yu. Kudenko)

19:00 Dinner

20:00 Participants' talks:

A. Shaykina, Study of neutrons from antineutrino interactions in ND280 of T2K

O. Petrova, East-west asymmetry effect in atmospheric muon flux in the Far Detector of NOvA

A. Sheshukov, Detection of supernova neutrinos in the NOvA experiment

S. Dmitrievsky, OPERA neutrino event subsamples at CERN Open Data Portal

S. Vasina, Final results of the search for $\nu\mu \rightarrow \nu e$ oscillations with the OPERA detector in CNGS beam

Friday April 12

9:00 A. Blondel, Modern methods of neutrino detection (Lecture 3)

9:50 Coffee

10:10 A. Blondel, Modern methods of neutrino detection (Lecture 4)

11:00 O. Kalashev, Machine learning in astroparticle physics (Lecture 2)

11:50 Lunch and mountains

16:30 Coffee

16:50 [E] SENSE tutorial/ [R] Machine learning tutorial

18:00 [R] SENSE tutorial/ [E] Machine learning tutorial

19:00 Dinner

20:00 Participants' talks:

W. Wu, Neutrino oscillation in Daya Bay Experiment

A. Ershova, Background from neutrons induced in the reactions of atmospheric muons with the DANSS passive shielding

K. Altenmueller, A laboratory search for keV-scale sterile neutrinos with TRISTAN

A. Vishneva, Recent results of the Borexino solar neutrino program

I. Alikhanov, The effective neutrino approximation

Saturday April 13

9:00 A. Blondel, Modern methods of neutrino detection (Lecture 5)

9:50 Coffee

10:10 A. Blondel, Modern methods of neutrino detection (Lecture 6)

11:00 O. Kalashev, Machine learning in astroparticle physics (Lecture 3)

11:50 Lunch and mountains

16:30 Coffee

16:50 M. Vagins, MeV neutrino astrophysics (Lecture)

17:40 Neutrino discussion (A. Blondel, M. Vagins)

19:00 Dinner

20:00 Participants' talks:

D. Krichevsky, Search for astro-gravitational correlations: OGRAN and BUST

V. Romanenko, Experiment Carpet-3: search for cosmic gamma rays

L. Vetoshkina, Muon detectors for the gamma-observatory TAIGA

S. Ivanov, New detector for a search of muon bundles in ultra-high energy cosmic rays

V. Scotti, The EUSO-SPB2 mission

Sunday April 14

9:00 D. Martynov, Detection techniques for gravitational waves (Lecture)

9:50 Coffee

10:10 V. Kuzminov, Baksan astroparticle physics program (Lecture)

11:00 Science at Baksan – short talks:

R. Novoseltseva, Status of the experiment on the search of neutrino bursts with BUST

V. Petkov, Carpet-3: a PeV gamma-ray observatory

A. Gangapshev, Low background experiments at BNO

V. Gavrin, BEST – the gallium experiment for a sterile neutrino search

11:50 Lunch

13:00 Excursion

19:30 Social dinner

Monday April 15

9:00 M. Kachelriess, Multimessenger astrophysics (Lecture 1)

9:50 Coffee

10:10 M. Kachelriess, Multimessenger astrophysics (Lecture 2)

11:00 O. Kalashev, Machine learning in astroparticle physics (Lecture 4)

11:50 Lunch and mountains

16:30 Coffee

16:50 Machine learning hackathon

19:00 Dinner

20:00 Participants' talks:

E. Stadnichuk, Geo particle physics

N. Shchechilin, Equation of state and composition of accreting neutron stars inner crust

R. Zhokhov, Dense baryorionic matter and dualities in QCD phase diagram

P. Petryakova, Clusters of primordial black holes

Tuesday April 16

9:00 M. Kachelriess, Multimessenger astrophysics (Lecture 3)

9:50 Coffee

10:10 M. Kachelriess, Multimessenger astrophysics (Lecture 4)

11:00 O. Kalashev, Machine learning in astroparticle physics (Lecture 5)

11:50 Lunch and mountains

16:30 Coffee

16:50 Multimessenger tutorial

18:10 D. Naumov, Coherent neutrino-nucleus scattering.
Theory and Experiment (Lecture)

19:00 Dinner

20:00 Participants' talks:

E. Kozlova, Experiment RED-100 for studying CEvNS

E. Kozlova, Noble Element Simulation Technique v2.0

B. Bergmann, Timepix detectors and their applications in particle physics

S. Gohl, Results of the Space Application of Timepix Radiation Monitor in Low Earth Orbit

Wednesday April 17

9:00 M. Kachelriess, Multimessenger astrophysics (Lecture 5)

9:50 Coffee

10:10 M. Kachelriess, Multimessenger astrophysics (Lecture 6)

11:00 O. Kalashev, Machine learning in astroparticle physics (Lecture 6)

11:50 Lunch and mountains

16:30 Coffee

16:50 Multimessenger discussion

18:10 D. Naumov, JINR astroparticle physics program (Lecture)

19:00 Dinner

20:00 Participants' talks, TBA

Thursday April 18 Departures

Excursion to Baksan Neutrino Observatory will take place on April 14. Excursion program includes visiting of three places in BNO:

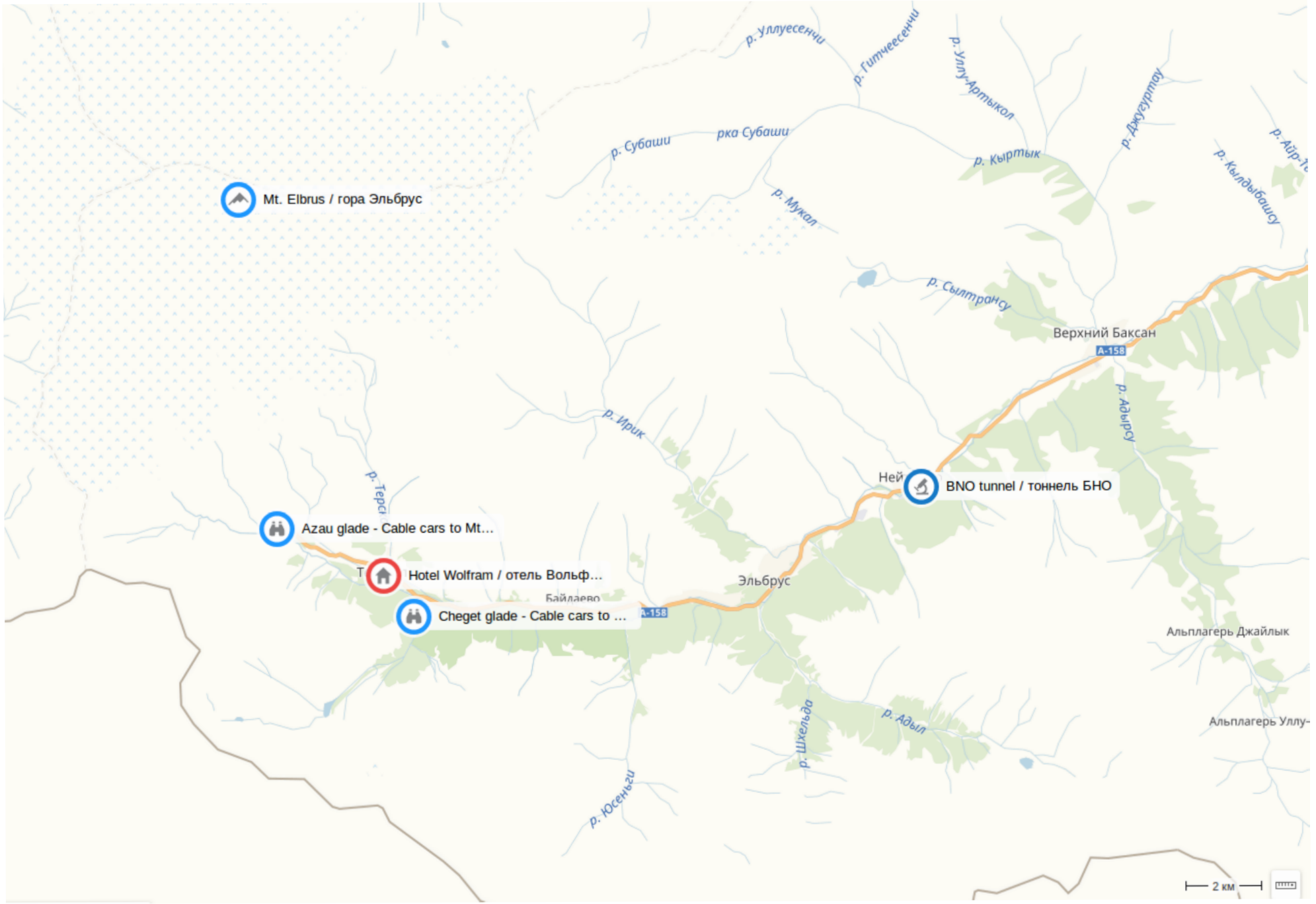
1) the surface «Carpet-3» air shower array for studying extensive air showers and search for photons with energies around PeV. «Carpet-3» currently has the best sensitivity in the world to diffuse photons of this range;

2) moderately deep underground laboratories – Baksan Underground Scintillation Telescope (BUST), registered the signal from 1987A supernova and continuing to collect data, and Optoacoustic GRavitational ANtenna (OGRAN);

3) very deep underground laboratories including the gallium-germanium solar neutrino laboratory, the new Baksan Experiment on Sterile Transitions (BEST) and low-background laboratories.

Program overview:

	10 Apr	11 Apr	12 Apr	13 Apr	14 Apr	15 Apr	16 Apr	17 Apr	**18 Apr**
		8:45-9:10 Opening							
9:00- 9:50		9:10-10:00 Lecture A. Blondel	Lecture A. Blondel	Lecture A. Blondel	Lecture D. Martynov	Lecture M. Kachelriess	Lecture M. Kachelriess	Lecture M. Kachelriess	
9:50- 10:10		10:00-10:20 Coffee	Coffee	Coffee	Coffee	Coffee	Coffee	Coffee	
10:10- 11:00		10:20-11:10 Lecture A. Blondel	Lecture A. Blondel	Lecture A. Blondel	Lecture V. Kuzminov	Lecture M. Kachelriess	Lecture M. Kachelriess	Lecture M. Kachelriess	
11:00- 11:50		11:10-12:00 Lecture O. Kalashev	Lecture O. Kalashev	Lecture O. Kalashev	Science at BNO: short talks	Lecture O. Kalashev	Lecture O. Kalashev	Lecture O. Kalashev	
11:50- 16:30		Lunch, mountains	Lunch, mountains	Lunch, mountains	Lunch	Lunch, mountains	Lunch, mountains	Lunch, mountains	
16:30- 16:50	Arrivals	Coffee	Coffee	Coffee		Coffee	Coffee	Coffee	Departures
16:50- 19:00		16:50-17:40 Lecture Yu. Kudenko	16:50-17:50, 18:00-19:00 SENSE/ Machine learning tutorials	16:50-17:40 Lecture M. Vagins	13:00-18:30 Excursion	16:50-19:00 Machine learning hackathon	16:50-18:10 Multimessenger tutorial	16:50-18:10 Multimessenger discussion	
		17:40-19:00 Neutrino discussion		17:40-19:00 Neutrino discussion			18:10-19:00 Lecture D. Naumov	18:10-19:00 Lecture D. Naumov	
19:00- 20:00	Welcome party	Dinner	Dinner	Dinner	19:30 Social dinner	Dinner	Dinner	Dinner	
20:00- 21:30		Participants' talks	Participants' talks	Participants' talks		Participants' talks	Participants' talks	Participants' talks	


Mt. Elbrus / гора Эльбрус
Azau glade - Cable cars to Mt…
Hotel Wolfram / отель Вольф…
Cheget glade - Cable cars to …
BNO tunnel / тоннель БНО
р. Уллуесенчи
р. Гитчеесенчи
р. Уллу-Артыкол
р. Джугуртау
р. Айр-Ты
р. Субаши
рка Субаши
р. Кыртык
р. Мукал
р. Кылдыбашсу
р. Сылтрансу
Верхний Баксан
А-158
р. Ирик
р. Адырсу
Ней
р. Терск
Эльбрус
Байдаево
Альплагерь Джайлык
р. Адыл
р. Шхельда
Альплагерь Уллу-
р. Юсеньги
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