Gravitation, Cosmology and Astrophysics: curriculum of the 4th International Youth Summer School

July 3rd-7th, 2023, Bauman Moscow State Technical University, Russia

July 3rd

9.30-10.00: Opening ceremony

9.30-9.45: Gladyshev Vladimir (Dr.Sc. (Phys. Math.), Professor, Head of the Scientific Educational Complex of Fundamental Sciences, Bauman Moscow State Technical University, Russia) – *introductory speech* 9.45-10.00: Starobinsky Alexey (Academician of the Russian Academy of Sciences, Dr.Sc. (Phys. Math.), Chief Research Fellow, Landau Institute for Theoretical Physics of the Russian Academy of Sciences, Russia) – *introductory speech*

10.00-11.35: Starobinsky Alexey (Academician of the Russian Academy of Sciences, Dr.Sc. (Phys. Math.), Chief Research Fellow, Landau Institute for Theoretical Physics of the Russian Academy of Sciences, Russia) *What preceded inflation in the early Universe?*

11.35-12.00: Coffee break

12.00-13.35: Berezin Viktor (Dr.Sc. (Phys. Math.), Senior Research Fellow, Institute for Nuclear Research of the Russian Academy of Sciences, Russia) *The principle of least action and cosmological particle creation*

13.35-13.50: Coffee break

13.50-15.25: Chervon Sergey (Dr.Sc. (Phys. Math.), Professor, Ulyanovsk State University of Education, Bauman Moscow State Technical University, Russia) *Dynamic models of the accelerating expansion of the Universe*

July 4th

10.00-11.35: Fomin Igor (Dr.Sc. (Phys. Math.), Professor, Bauman Moscow State Technical University, Russia) *Cosmological inflation models based on Einstein's theory of gravity and its modifications*

11.35-12.00: Coffee break

12.00-13.35: Mishra Bivudutta (PhD, Professor, BITS-Pilani, Hyderabad Campus, India) *Cosmology in teleparallel gravity and the dynamical system analysis*

13.35-13.50: Coffee break

13.50-15.25: Tripathy Sunil Kumar (PhD, Professor, Indira Gandhi Institute of Technology, India) *Bouncing cosmological models in modified gravity theories*

July 5th

10.00-11.35: Gladyshev Vladimir (Dr.Sc. (Phys. Math.), Professor, Head of the Scientific Educational Complex of Fundamental Sciences, Bauman Moscow State Technical University, Russia) *Investigating possible anisotropy of space*

11.35-12.00: Coffee break

12.00-13.35: Levin Sergey (Dr.Sc. (Eng.), Professor, Moscow Institute of Expertise and Testing, Russia) *Measurement problem of using redshift to calibrate the cosmic distance ladder: anisotropy and large-scale gravitational heterogeneity dipoles*

13.35-13.50: Coffee break

13.50-15.25: Kauffman Louis (PhD, Professor, University of Illinois at Chicago, USA) *Nilpotents, Clifford algebras and elementary particles*

July 6th

10.00-11.35: Pinto Innocenzo (Professor, Dean of the Italian Electromagnetics Society (SIEm), University of Naples "Federico II", Italy) *Time-frequency gravitational wave data analysis*

11.35-12.00: Coffee break

12.00-13.35: Mitrofanov Valeriy (Dr.Sc. (Phys. Math.), Professor, Lomonosov Moscow State University, Russia) *Gravitational-wave interferometer: from the conception to the present day*

13.35-13.50: Coffee break

13.50-15.25: Vyatchanin Sergey (Dr.Sc. (Phys. Math.), Professor, Lomonosov Moscow State University, Russia) *Gravitational wave antennas and quantum measurements*

July 7th

10.00-11.35: Sahoo Pradyumn Kumar (PhD, Professor, BITS-Pilani, Hyderabad Campus, India) *Wormhole geometry: Is it science or science fiction?*

11.35-12.00: Coffee break

12.00-13.35: Giuseppe Vitiello (PhD, Professor, Salerno University, Italy) *Developments in Quantum field theory - modeling the brain*

13.35: **Conclusion**