

XXIII International Meeting Physical Interpretations of Relativity Theory
PIRT- 2023 3-6 July 2023

Monday, 3rd July 2023

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| 9.00-9.20 | Opening the PIRT Meeting | |
| Chair: Prof. Morozov Andrey | | |
| 9.20-9.40 | Starobinsky Alexei | Constraining graviton production during and after inflation |
| 9.40-10.00 | Mishra Bivudutta | Constraining teleparallel gravity with the dynamical system analysis and the cosmological implications |
| 10.00-10.20 | Sahoo Pradyumn | Wormhole: Is it Science or Science fiction? |
| 10.20-10.40 | Tripathy Sunil, Mishra Bivudutta | Cosmological Implications of f(Q,T) gravity |
| 10.40-11.00 | Corda Christian | The secret of planets' perihelion between Newton and Einstein |
| 11.00-11.20 | Coffee Break | |
| Chair: Prof. Mishra Bivudutta | | |
| 11.20-11.35 | Berezin Victor, Ivanova Inna | Conformal invariance and cosmology |
| 11.35-11.50 | Zubair Muhammad | Ultracompact stars in the light of minimal geometric deformation |
| 11.50-12.05 | Fomin Igor, Dentsel Evgenii | Inflationary models based on the generalized exact cosmological solutions |
| 12.05-12.20 | Chervon Sergey, Bolshakova Katerina | Exact power-law solutions in the scalar-torsion cosmology |
| 12.20-12.35 | Duchaniya Lokesh Kumar, Kadam Siddheshwar, Mishra Bivudutta, Jackson Levi Said | Dynamical systems analysis in f(T, ϕ) gravity |
| 12.35-12.50 | Verma Murli Manohar | Scalaron as Dark matter in modified gravity |
| 12.50-13.20 | Lunch | |
| Chair: Prof. Sahoo Pradyumn | | |
| 13.20-13.35 | Chaadaeva Tatyana, Fomin Igor, Chervon Sergey | Torsion Scalar Gravity with a Galileon-type field self-interaction |
| 13.35-13.50 | Agrawal Amarkumar, Mishra Bivudutta, Santosh Lohakare | Non-singular Bouncing Solution of the Universe in Extended Symmetric Teleparallel Gravity |
| 13.50-14.05 | Manucharyan Gevorg, Fomin Igor, Gladyshev Vladimir, Litvinov Dmitry | On the detection of high-frequency relic gravitational waves |
| 14.05-14.20 | Meierovich Boris | On the gravitational field of a black hole in a synchronous coordinate system |
| 14.20-14.35 | Dumin Yurii | On the Interpretation of Quasi-oscillatory Structure of Low Multipoles in the CMB Spectrum |
| 14.35-14.50 | Silagadze Zurab, Sagavdak Alina | On Finslerian extension of special relativity |

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| 14.50-15.05 | Mayburov Sergey | Search of periodical and aperiodical variations of nucleus weak decay parameters |
| 15.05-15.25 | Coffee Break | |
| Chair: Prof. Fomin Igor | | |
| 15.25-15.40 | Behera Dipanjali | Singular Bounce in Generalized Brans-Dicke theory |
| 15.40-15.55 | Narawade Shubham, Mishra Bivudutta | Phantom cosmological model with observational constraints in $f(Q)$ gravity |
| 15.55-16.10 | Gatin Khasan, Sushkov Sergey | Anisotropic and inhomogeneous cosmological models in the scalar-tensor theory of gravitation with non-minimal kinetic coupling |
| 15.55-16.10 | Ishkaeva Valeria, Sushkov Sergey | Shadow and Image of Ellis-Bronnikov wormhole |
| 16.10-16.25 | Adorno Tiago, Breev Alexander, Gitman Dmitry | Electromagnetic radiation of accelerated charged particles in the framework of a semiclassical approach |
| 16.25-16.40 | Chaadaeva Tatyana, Fomin Igor, Chervon Sergey | Investigation of the Chiral Cosmological Model of $f(R, \square R)$ gravity |
| 16.40-16.55 | Das Shyam | Modelling of compact objects in support of observational data by exploring the intrinsic connection between the equation of state parameter and tidal Love number |
| 16.55-17.10 | Portnov Yury | Non-Unitarity of Evolution Operators in Gravitational Fields |
| 17.10-17.25 | Laxmipriya Pati, Laur Jarv | Scalar-nonmetricity cosmology in the general relativity limit |
| 17.25-17.40 | Ibeh Godwin, Akpajotor Godfrey | Hubble constant determination using gravitational waves data from smartphone |
| 17.40-17.55 | Abrarov Dmitry | Relativistic analytical one-degree of freedom model of the Earth-Moon system |

Tuesday, 4th July 2023

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| Chair: Prof. Izmailov George | | |
| 9.00-9.20 | Kauffman Louis | Nilpotents, Clifford Algebras and Elementary Particles |
| 9.20-9.40 | Sushkov Sergey | Some cosmological and astrophysical aspects of Horndeski gravity |
| 9.40-10.00 | Gutierrez-Pineros Antonio, Hernando Quevedo | Generalization of the C3 matching procedure |
| 10.00-10.20 | Amoroso Richard | A Unified Field Theory of Gravitation |
| 10.20-10.40 | Kerner Richard | Five-dimensional gravity and non-linear Electrodynamics |
| 10.40-11.00 | Vitiello Giuseppe | Phase correlations in quantum field theory and entanglement |
| 11.00-11.20 | Coffee Break | |
| Chair: Prof. Sushkov Sergey | | |
| 11.20-11.35 | Breev Alexander, Gitman Dmitry, Gavrilov Sergey | Vacuum mean values of spinor field current and energy-momentum tensor in a constant electric background |
| 11.35-11.50 | Tawfik Abdel | An Approach to Quantize General Relativity |
| 11.50-12.05 | Dokuchaev Vyacheslav | Spins of supermassive black holes |
| 12.05-12.20 | Tuleganova Gulira | Relative Time Delay in C-metric |

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| 12.20-12.35 | <i>Ishkaeva Valeria, Sushkov Sergey</i> | Shadow and Image of Ellis-Bronnikov wormhole |
| 12.35-12.50 | <i>Galeev Rafkat, Sushkov Sergey</i> | Anisotropic cosmological models with non-minimal derivative coupling |
| 12.35-12.50 | <i>Zhogin Ivan</i> | Large-scale virial relations in 5D Absolute Parallelism with 4th-order gravity |
| 12.50-13.20 | Lunch | |
| Chair: Prof. Grunskaya Liubov | | |
| 13.20-13.35 | <i>Ayala Ona Roger Ivan, Shestakova Tatyana</i> | Schrodinger equation of the Schwarzschild metric |
| 13.35-13.50 | <i>Babourova Olga, Frolov Boris</i> | Geometric criteria for gravitational waves and the Hodge-de Rham Laplacian |
| 13.50-14.05 | <i>Sedov Sergey</i> | About the Weyl-Dirac theory of gravitation and its development |
| 14.05-14.20 | <i>Santosh Lohakare, Mishra Bivudutta, Maurya Sunil, Singh Newton</i> | Analysing the geometrical and dynamical parameters of the modified Teleparallel-Gauss–Bonnet model |
| 14.20-14.35 | <i>Izmailov George, Ozolin Vladimir</i> | Simulation of extracting kinetic energy from a rotating black hole |
| 14.35-14.50 | <i>Fil'chenkov Michael, Laptev Yury</i> | On the Time Problem in Quantum Cosmology |
| 14.50-15.05 | <i>Kassandrov Vladimir</i> | The algebrodynamics: in search of the ultimate "World" algebraic structure |
| 15.05-15.25 | Coffee Break | |
| Chair: Prof. Pinto Innocenzo | | |
| 15.25-15.40 | <i>Andresen Jensine</i> | Breakthrough Perception, Not Breakthrough Propulsion |
| 15.40-15.55 | <i>Romero Carlos</i> | The coming back of the Proca field in contemporary astrophysics |
| 15.55-16.10 | <i>Grunskaya Liubov, Isakevich Daniil, Isakevich Valery</i> | Physical basis for revealing the influence of gravitational waves from binary star systems on the Earth's electromagnetic field |
| 16.10-16.25 | <i>Shishanin Andrei</i> | Features of higher gauge theories |
| 16.25-16.40 | <i>Kiselev Gleb</i> | Einstein–Yang–Mills–Aether Theory with Nonlinear Axion Field: Decay of Color Aether and the Axionic Dark Matter |
| 16.40-16.55 | <i>Zhogin Ivan</i> | Large-scale virial relations in 5D Absolute Parallelism with 4th-order gravity |
| 16.55-17.10 | <i>Monakhov Vadim</i> | The impossibility of the existence of Majorana spinors as physical particles |
| 17.10-17.25 | <i>Chub Vasilii</i> | Algebraic cube of physical theories |
| 17.25-17.40 | <i>Baranov Alexander, Saveljev Evgeniy</i> | The open universe model with the cosmological constant as a particle movement task in a force field |
| 17.40-17.55 | <i>Gueorguiev Vesselin, Maeder Andre</i> | Progress within the Scale Invariant Vacuum (SIV) Paradigm |

Wednesday, 5th July 2023

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| Chair: Prof. Kauts Vladimir | | |
| 9.00-9.20 | <i>Vyatchanin Sergey</i> | Laser Gravitational Wave Antennas and Quantum Measurements |

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| 9.20-9.40 | <i>Mitrofanov Valery</i> | Gravitational-wave interferometer, from the first ideas to the present days |
| 9.40-10.00 | <i>Postnov Konstantin, Mitichkin Nikita</i> | On mergers of binary primordial black holes in LIGO-Virgo-KAGRA observations |
| 10.00-10.20 | <i>Pinto Innocenzo, Pierro Vincenzo</i> | Multimaterial Mirrors for Interferometric Gravitational Wave Detectors: Recent Results |
| 10.20-10.40 | <i>Gladyshev Vladimir, Kauts Vladimir, Fomin Igor, Morozov Andrey, Kayutenko Alexander, Sharandin Evgenii, Nikolaev Pavel</i> | Processes of gravitational and electromagnetic wave conversion and the possibility of implementing them in terrestrial conditions |
| 10.40-11.00 | <i>Triay Roland</i> | Voids in Large Scale Structures of the Universe |
| 11.00-11.20 | Coffee Break | |
| Chair: Postnov Konstantin | | |
| 11.20-11.35 | <i>Parbati Sahoo</i> | Traversable wormholes in the traceless f(R,T) gravity |
| 11.35-11.50 | <i>Shestakova Tatyana</i> | The problem of time in quantum gravity: analysis of various approaches |
| 11.50-12.05 | <i>Panov Vjacheslav, Sandakova Olga, Kuvshinova Elena</i> | Various cosmological models of inflation with rotation |
| 12.05-12.20 | <i>Gavrilov Sergei, Gitman Dmitry</i> | Magnon-antimagnon production on magnetic field inhomogeneities |
| 12.20-12.35 | <i>Kadam Siddheshwar, Mishra Bivudutta, Jackson Levi Said</i> | Teleparallel scalar-tensor gravity through cosmological dynamical systems |
| 12.35-12.50 | <i>Ray Pratik Premadarshi, Mishra Bivudutta.</i> | Cosmological Models with Big Rip and Pseudo Rip Scenarios in Extended Theory of Gravity |
| 12.50-13.20 | Lunch | |
| Chair: Vyatchanin Sergey | | |
| 13.20-13.35 | <i>Belonenko Aleksei, Rudenko Valentin, Manucharyan Gevorg, Kulagin Victor, Popov Sergey, Gusev Alexander</i> | Measurements of the gravitational frequency shift of radio communication signals with RadioAstron satellite in a strongly elliptical orbit |
| 13.35-13.50 | <i>Dubey Rajesh Kumar</i> | Gravitational Waves Standard Sirens for Measuring Hubble's Constant |
| 13.50-14.05 | <i>Litvinov Dmitry, Pilipenko Sergey</i> | Gravitational effects of order c^{-4} in the next generation of experiments with time and frequency standards |
| 14.05-14.20 | <i>Yershov Vladimir</i> | Orbital Motion in the Reference Frame of a Blackhole |
| 14.20-14.35 | <i>Nazmiev Albert, Vyatchanin Sergey, Matsko Andrey</i> | Quantum sensitivity of broadband variational measurement |
| 14.35-14.50 | <i>Avramenko Arkady</i> | Pulsar: metric generalization of time-space of celestial and quantum mechanics |
| 14.50-15.05 | <i>Levin Sergey</i> | Measuring problem of calibration of the cosmological distances scale: Anisotropy and large-scale gravitational dipoles of inhomogeneity |

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| 15.05-15.25 | Coffee Break | |
| Chair: Tripathy Sunil | | |
| 15.25-15.40 | Gordin Michael, Bazlev Dmitry, Gladyshev Vladimir, Kauts Vladimir, Kayutenko Alexander, Sharandin Evgenii, Nikolaev Palvel | Using the cosmic microwave background radiation to develop a novel navigation system |
| 15.40-15.55 | Timofeev Vladimir | Electron scattering on a wormhole in the Born approximation |
| 15.55-16.10 | Krysanov Vladimir | Laser Noise in the GW Detector AURIGA |
| 16.10-16.25 | Zhuravlev Victor | New theory of gravity, stellar oscillations and the 11-year cycle of solar activity |
| 16.25-16.40 | Daishev Rinat, Pavlov Boris, Kozyrev Sergey | Gravimetric laser interferometric installation |
| 16.40-16.55 | Chernitskii Alexander | About leptons in space-time film theory |

Thursday, 6th July 2023

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| Chair: Prof. Levin Sergey | | |
| 9.00-9.20 | Gitman Dmitry, Breev Alekzander | Photon entanglement by an electron medium and by a constant magnetic field |
| 9.20-9.40 | Pinto Innocenzo, Petracca S. | Particle Accelerators and Gravitational Waves: Old and New Perspectives |
| 9.40-10.00 | Pavlov Yuri, Grib Andrey | Phase transfers in elementary particle physics in the vicinity of black hole horizon |
| 10.00-10.20 | Muhammad Sharif | Anisotropic Compact Stars in Energy-Momentum Squared Gravity |
| 10.20-10.40 | Groshev Dmitry, Balakin Alexander | Axion dyon in nonlinear electrodynamics |
| 10.40-11.00 | Kiktenko Evgeniy | Tracking propagation of quantum information along postselection-induced time arrows |
| 11.00-11.20 | Coffee Break | |
| Chair: Prof. Berezin Victor | | |
| 11.20-11.35 | Kislyakova Darya, Shestakova Tatyana | The semiclassical limit of a closed isotropic model of the Universe with a scalar field in frameworks of various approaches |
| 11.35-11.50 | Zloshchastiev Konstantin | Induced spacetime metric and galaxy rotation curves in superfluid vacuum theory |
| 11.50-12.05 | Pestov Ivanhoe | Physical General Relativity |
| 12.05-12.20 | Dyadina Polina, Avdeev N. | Thin accretion disk signatures in hybrid metric-Palatini f(R)-gravity |
| 12.20-12.35 | Samorodov Nikita, Popov Vladimir | Stability of non-relativistic Bose stars |
| 12.35-12.50 | Saha Bijan | Maxwell-Dirac system in cosmology |
| 12.50-13.20 | Lunch | |
| Chair: Prof. Kauts Vladimir | | |
| 13.20-13.35 | Efremova Anna, Balakin Alexander | Axionic extension of Einstein-Dirac-aether Theory |

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| 13.35-13.50 | Krylova Nina, Grushevskaya Halina | Finsler-Lagrange multi-relaxation-time dynamics of cosmological 1st order phase transition |
| 13.50-14.05 | Le Duc Thong | Searching for a secular variation of the gravitational constant using strong gravitational fields |
| 14.05-14.20 | Izmailov George, Burinskii Alexander | The Kerr-Newman electron as an adaptive system |
| 14.20-14.35 | Burinskii Alexandr | Kerr-Newman solution combines gravity with quantum theory |
| 14.35-14.50 | Vertogradov Vitalii, Misyura Maxim | Surrounded generalized Vaidya spacetime by cosmological fields |
| 14.50-15.05 | Kopylov Sergey | Characteristics of relic black holes |
| 15.05-15.25 | Coffee Break | |
| Chair: Prof. Chervon Sergey | | |
| 15.25-15.40 | Antonyuk Pavel | Mathematical interpretation of the accelerating expansion of the Universe |
| 15.40-15.55 | Noskov Vitaly | On the geometrization of classical fields |
| 15.55-16.10 | Petrova Ludmila | Internal connection between field theory equations |
| 16.10-16.25 | Misyura Maxim, Vertogradov Vitalii | The hairy regular black hole by gravitational decoupling |
| 16.25-16.40 | Sasmita Kumari Pradhan | Rip behaviour in Brans-Dicky theory |
| 16.40-16.55 | Nakibov Ruslan, Ursulov Andrey | Orbits of massive particles in Kottler metric |
| 16.55-17.10 | Petrov Alexander, Emtsova Elena | On conserved quantities for a moving black hole in TEGR |
| 17.10-17.25 | Shakirzyanov Amir | Axionic extension of the Einstein-Maxwell-aether theory |
| 17.25-17.40 | Trell Erik | Lie Differential Geometry Aufbau of the Atoms and Molecules |
| 17.40-18.00 | Close of Moscow PIRT Meeting | |

Posters:

1. *Kozyrev Sergey, Daishev Rinat, Pavlov Boris*

The confrontation between coordinate system and coordinate conditions

2. *Gusev Yuri*

The geometrical theory of specific heat

3. *Kodukula Sivaprasad*

Physical Interpretation of Quantum Space Time in to Mathematical Manifestation of General Relativity - a Clue to Grand

4. *Lalremruati PC*

Using $f(R)$ and higher dimensional gravity theory to search for the breaking point of General Relativity near $SgrA^*$

5. *Osetrin Evgeny*

Gravitational and electromagnetic waves in Bianchi type IV universes

6. *Osetrin Konstantin*

Gravitational waves and Shapovalov's exact wave models of space-time

7. *Osetrina Elena*

On the light cone and charge radiation in a plane gravitational wave

8. *Pradhan Sneha*

Buchdahl Quark Star within $f(Q)$ Gravity

9. *Sergeev Michael*

Relativistic top

10. *Yershov Vladimir*

Physical Meaning of the Einstein-de Sitter Space

11. *Yusupova Rosaliya*

Accretion process on to wormholes

12. *Zhogin Ivan*

Extragalactic TeV Photons and the Zero-Point Vibration Spectrum Limit

13. *Shleiger Leonid, Vertogradov Vitalii*

Lorentz force for charged particles with negative energy in black hole Binaries

14. *Kudryavtsev Dmitry, Vertogradov Vitalii*

On the temperature of hairy black holes

15. *Jalali Rezvan*

Gravity

16. *Titova Daria*

Eigenfrequencies of rotating waveguides and resonators

17. *Yurasov Nikolay*

On the temperature distribution in a black hole