

FIRST HERMANN MINKOWSKI MEETING ON THE FOUNDATIONS OF SPACETIME PHYSICS

CONFERENCE PROGRAM

Talks - 25 min + 5 min questions
Supported presentation's files are PowerPoint (Windows) or PDF
Only laptops and projectors for the presentations will be available

Monday, May 15, 2017

8:30 - Registration

9:15 - 9:30 Welcome Remarks

Chair: Chair: Archil Kobakhidze (University of Sydney)

9:30-10:00 - Jerrold Franklin (Temple University), Rigid body motion in special relativity

10:00-10:30 - D. N. Coumbe (Niels Bohr Institute), A minimal extension of the Lorentz transformations

10:30-11:00 - Wei-Tou Ni (University of Shanghai for Science and Technology), Ultrahigh-Precision Empirical 'Derivation' of the Minkowski Metric from the Spacetime Structure

11:00-11:30 - *Coffee break and free discussions*

11:30-12:00 - Reinoud Jan Slagter (Astronomisch Fysisch Onderzoek Nederland and University of Amsterdam), Evidence of Cosmic Strings by Observation of the Alignment of Quasar Polarization Axes

12:00-12:30 - Vesselin G. Gueorguiev (Institute for Advanced Physical Studies), The Role of Time for Reparametrization-Invariant Systems

12:30-13:00 - *Available slot (speaker unable to attend)*

13:00-14:00 - *Lunch*

14:00-16:00 - *Free discussions on the beach or around the swimming pool*

Chair: Vesselin G. Gueorguiev (Institute for Advanced Physical Studies)

16:00-16:30 - Garnet Ord (Ryerson University), Can Minkowski Spacetime See Quantum Superposition?

16:30-17:00 - Fabrizio Pinto (Izmir University of Economics), Dispersion forces as probes of spacetime fluctuations: Epistemology, theory, strategies for laboratory detection, and prospects for experiments in space

17:00-17:30 - *Coffee break and free discussions*

17:30-18:00 - Ivan Gutierrez-Sagredo (Universidad de Burgos), Poisson-Minkowski spacetimes and Poincare Drinfel'd doubles

18:00-18:30 - *Available slot (speaker unable to attend)*

$$d\tau = \sqrt{dt^2 - dx^2 - dy^2 - dz^2}$$

Tuesday, May 16, 2017

Chair: Carlos Frajuca (Sao Paulo Federal Institute)

9:30-10:00 - Jerzy Kijowski (Center for Theoretical Physics, Polish Academy of Sciences), Universality of the Einstein theory of gravitation

10:00-10:30 - Naresh Dadhich (Inter-University Center for Astronomy & Astrophysics), Understanding General Relativity after 100 years: a novel perspective

10:30-11:00 - Tichomir Tenev, Mark Horstemeyer (Mississippi State University), The Mechanics of Spacetime - A Solid Mechanics Perspective on the Theory of General Relativity

11:00-11:30 - *Coffee break and free discussions*

11:30-12:00 - Yakov Itin (Hebrew U. Jerusalem & Jerus. Coll. Technology), Friedrich W. Hehl (U. Cologne & U. Missouri, Columbia), Yuri N. Obukhov (Nuclear Safety Inst., RAS, Moscow), Premetric gravity

12:00-12:30 - Dmitri Vassiliev (University College London), A non-geometric interpretation of Lorentzian spin structure

12:30-13:00 - Mohammed Sanduk (University of Surrey), Is the flat spacetime related to a kinematical structure?

13:00-14:00 - *Lunch*

14:00-15:30 - *Free discussions on the beach or around the swimming pool*

Chair: Gijs Leegwater (Erasmus University Rotterdam)

15:30-16:00 - S. Dell'Agnello, E. Ciocchi, S. Contessa, G. Delle Monache, R. March, M. Martini, C. Mondaini, L. Porcelli, L. Salvatori, M. Tibuzzi, G. Bellettini, M. Maiello (Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali di Frascati (INFN-LNF)), D. Currie (University of Maryland), J. Chandler (Harvard-Smithsonian Center for Astrophysics), G. Bianco (International Laser Ranging Service (ILRS) & Agenzia Spaziale Italiana (ASI)), R. Vittori (INFN-LNF & ASI) G. Esposito, E. Battista (INFN-Naples), The Moon and Mars as Test Bodies for General Relativity

16:00-16:30 - D. A. Konkowski (Department of Mathematics, U.S. Naval Academy), Classical and Quantum Singularities in "Cut-and-Pasted" Minkowski Spacetime

16:30-17:00 - Ahmad ALBadawi (Al-Hussein Bin Talal University), The Dirac equation in Schwarzschild mass coupled to a Stationary Electromagnetic Field

17:00-17:30 - *Coffee break and free discussions*

17:30-18:00 - Carlos Frajuca (Sao Paulo Federal Institute), Francisco Yastami Nakamoto, Givanildo Alves dos Santos and Fabio da Silva Bortoli, Gravitational Waves Propagation through the Stochastic Background of Gravitational Waves

18:00-18:30 - Archil Kobakhidze (University of Sydney), Exploring quantum space-time with gravitational waves

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Wednesday, May 17, 2017

Chair: Christopher Duston (Merrimack College)

9:30-10:00 - Dennis Dieks (Utrecht University), Time Coordinates versus Clock Readings: Einstein's Struggle with Background Independence and General Covariance

10:00-10:30 - Tian Yu Cao (Boston University), The Meaning of Background Independence and the nature of spacetime

10:30-11:00 - Marco Giovanelli (University of Tuebingen), 'Like classical Thermodynamics before Boltzmann'. Why did Einstein Compare Relativity Theory with Thermodynamics?

11:00-11:30 - *Coffee break and free discussions*

11:30-12:00 - Nadja Magalhaes (Federal University of Sao Paulo), Gravity, time and motion

12:00-12:30 - Marc Holman (University of Western Ontario), Alternatives to General Relativity and the Nature of Gravitation

12:30-13:00 - Vesselin Petkov (Minkowski Institute, Montreal), Minkowski's Program of Geometrizing Physics and General Relativity

13:00-14:00 - *Lunch*

14:00-16:00 - *Free discussions on the beach or around the swimming pool*

Chair: Tichomir Tenev (Mississippi State University)

16:00-16:30 - *Available slot (speaker unable to attend)*

16:30-17:00 - Gijs Leegwater (Erasmus University Rotterdam), When GHZ meet Wigner's Friend: Does unitary single-world quantum mechanics necessarily violate Lorentz symmetry?

17:00-17:30 - *Coffee break and free discussions*

17:30-18:00 - Josephine Papst (indexicals - Centre of Philosophy, Theory of Science, and Theory of Art), On Hermann Minkowski's scientific methods of discovery and the ontology of the substantial point or the Weltpunkt and the Weltlinien

18:00-18:30 - *Available slot (speaker unable to attend)*

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Thursday, May 18, 2017

Chair: Reinoud Jan Slagter (Astronomisch Fysisch Onderzoek Nederland and University of Amsterdam)

9:30-10:00 - Christopher Duston (Merrimack College), Branched Covering Spaces and Partition Functions in Quantum Gravity

10:00-10:30 - Paul G. N. de Vegvar (SWK Research), Causality, locality, commutatively deformed general relativity, and dark matter: A journey to the classical-quantum spacetime frontier and back

10:30-11:00 - Marco de Cesare (King's College London), Bouncing cosmologies and accelerated expansion from quantum gravity condensates

11:00-11:30 - *Coffee break and free discussions*

11:30-12:00 - Petar Pavlovic (Institut für Theoretische Physik, Universität Hamburg), Cyclic cosmology in modified gravity

12:00-12:30 - Aizhan Myrzakul (Eurasian National University), Hojman Symmetry Approach for Modified Chaplygin Gas Cosmological Model

12:30-13:00 - Masoud Ghezelbash (University of Saskatchewan), Recent developments in the holography of black holes and conformal field theories

13:00-14:00 - *Lunch*

14:00-16:00 - *Free discussions on the beach or around the swimming pool*

Chair: Fabrizio Pinto (Izmir University of Economics)

16:00-16:30 - Myrzakulov Ratbay, Yerzhanov Koblandy, Gulnur Bauyrzhan (Eurasian International Center for Theoretical Physics and Eurasian National University), $F(R, T, X, \phi)$ cosmology via Noether symmetry

16:30-17:00 - Marko Sossich and Sasa Ilijic (University of Zagreb), Compact objects in torsion-based extended theory of gravity

17:00-17:30 - *Coffee break and free discussions*

17:30-18:00 - Mirosław J. Kubiak, The Four-Dimensional Spacetime with the Mass Density

18:00-18:30 - Hou Y. Yau (FDNL Research), Gravitational Field of a Thin Shell with Fictitious Oscillations

$$d\tau = \sqrt{dt^2 - dx^2 - dy^2 - dz^2}$$