

Contents

Abstracts of Plenary Talks	xvii
Part I Classical General Relativity	
Exact Hairy Black Holes	3
Andrés Anabalón	
Black Hole Formation from a Complete Past for the Einstein–Vlasov System	11
Håkan Andréasson	
How to Measure Deviation from the Kerr Initial Data: Recent Progress	19
Thomas Bäckdahl and Juan A. Valiente Kroon	
Hidden Symmetries of the Dirac Equation in Curved Space-Time.	25
Marco Cariglia	
Geometrostatics: The Geometry of Static Space-Times	35
Carla Cederbaum	
The Gravitational Equation in Higher Dimensions	43
Naresh Dadhich	
Geometric Inequalities for Black Holes	51
Sergio Dain	
Scalar Fields on Anti-de Sitter Background	53
Gyula Fodor, Péter Forgács and Philippe Grandclément	
Canonical Superenergy Tensors in General Relativity: A Reappraisal	61
Janusz Garecki	

Einstein’s “Prague Field Equation” of 1912: Another Perspective. . . .	69
Domenico Giulini	
Source Integrals of Asymptotic Multipole Moments	83
Norman Gürlebeck	
Geodesic Equations and Algebro-Geometric Methods	91
Eva Hackmann	
Illusory Horizons, Thermodynamics, and Holography Inside Black Holes.	99
Andrew J. S. Hamilton	
Shape Dynamics	111
Tim A. Koslowski	
Superradiance or Total Reflection?	119
András László and István Rácz	
Non-Linear Effects in Non-Kerr Spacetimes	129
Georgios Lukes-Gerakopoulos, George Contopoulos and Theodoros A. Apostolatos	
The Conformal Einstein Field Equations for Trace-free Perfect Fluids	137
Christian L��bbe and Juan A. Valiente Kroon	
Canonical Gravity, Non-Inertial Frames, Relativistic Metrology and Dark Matter	145
Luca Lusanna	
Gravomagnetic Solenoids.	155
Donald Lynden-Bell and Joseph Katz	
Exact Dynamical AdS Black Holes and Wormholes with a Klein-Gordon Field.	161
Hideki Maeda	
2.5PN Kick from Black-Hole Binaries in Circular Orbit: Nonspinning Case	169
Chandra Kant Mishra, K. G. Arun and Bala R. Iyer	

A Reference for the Covariant Hamiltonian Boundary Term	177
James M. Nester, Chiang-Mei Chen, Jian-Liang Liu and Gang Sun	
On a Five-Dimensional Version of the Goldberg-Sachs Theorem.	185
Marcello Ortoggio, Vojtěch Pravda, Alena Pravdová and Harvey S. Reall	
Gravitomagnetism: From Einstein's 1912 Paper to the Satellites LAGEOS and Gravity Probe B	191
Herbert Pfister	
Evolution of the Einstein Equations to Future Null Infinity.	199
Oliver Rinne and Vincent Moncrief	
Increase of Black Hole Entropy in Lanczos-Lovelock Gravity.	207
Sudipta Sarkar	
On the Stability Operator for MOTS and the 'Core' of Black Holes	215
José M. M. Senovilla	
The Twin Paradox in Static Spacetimes and Jacobi Fields	223
Leszek M. Sokołowski	
Geodesic Deviation in Kundt Spacetimes of any Dimension.	229
Robert Švarc and Jiří Podolský	
A Class of Conformal Curves on Spherically Symmetric Spacetimes.	239
Juan A. Valiente Kroon and Christian Lübbe	
Black Hole Collisions in Asymptotically de Sitter Spacetimes	247
Miguel Zilhão, Vitor Cardoso, Leonardo Gualtieri, Carlos Herdeiro, Ulrich Sperhake and Helvi Witek	
On the Effects of Rotating Gravitational Waves	255
Jiří Bičák, Joseph Katz, Tomáš Ledvinka and Donald Lynden-Bell	
Variations on Spacetimes with Boost-Rotation Symmetry	261
Jiří Bičák and David Kofroň	
On the Existence and Properties of Helically Symmetric Systems	267
Jiří Bičák, Martin Scholtz and Paul Tod	

Probing the Spacetime Structure Through Dynamics	275
Felipe T. Falciano	
Analytical Conformal Compactification of Schwarzschild Spacetime	279
Jakub Haláček and Tomáš Ledvinka	
Solutions in the 2 + 1 Null Surface Formulation	283
Tina A. Harriott and J. G. Williams	
Electric and Magnetic Weyl Tensors in Higher Dimensions	287
S. Hervik, M. Ortaggio and L. Wylleman	
Phase Structure of Five Dimensional Black Di-ring	291
Hideo Iguchi	
The Null Geodesics in the Black Saturn Spacetime	295
Alicja Konieczny	
Conformal Symmetries on the Horizon and Black Hole Entropy in Generic Dimensions.	299
Jianwei Mei	
Finsler Spacetimes and Gravity	305
Christian Pfeifer and Mattias Wohlfarth	
Lagrangian Analysis of ‘Trivial’ Symmetries in Models of Gravity . . .	309
Debraj Roy	
Quasi-normal Frequencies, Horizon Area Spectra and Multihorizon Spacetimes.	315
Jozef Skákala	
Asymptotically AdS Spacetimes and Isometric Embeddings	319
Steven Willison	
 Part II Cosmology and Relativistic Astrophysics	
A Cosmological Concordance Model with Particle Creation	325
J. S. Alcaniz, H. A. Borges, S. Carneiro, J. C. Fabris, C. Pigozzo and W. Zimdahl	

From ‘Nothing’ to Inflation and Back Again	331
Vladimír Balek	
Quasinormal Modes from a Naked Singularity	339
Cecilia Chirenti, Jozef Skákala and Alberto Saa	
Tracing a Relativistic Milky Way Within the RAMOD Measurement Protocol.	347
Mariateresa Crosta	
Is There a Flatness Problem in Classical Cosmology?	355
Phillip Helbig	
Cosmology in $f(R)$ Exponential Gravity	363
Luisa Jaime, Marcelo Salgado and Leonardo Patiño	
Regular and Chaotic Motion in General Relativity: The Case of a Massive Magnetic Dipole	373
Ondřej Kopáček, Jiří Kovář, Vladimír Karas and Yasufumi Kojima	
The Fitting Problem in a Lattice Universe	385
Julien Larena	
Hair of Astrophysical Black Holes	393
Maxim Lyutikov	
Backreaction Effects on the Luminosity-Redshift Relation in Inhomogeneous Cosmology	399
Giovanni Marozzi	
Scalar Averaging in Szekeres Models	407
Roberto A. Sussman	
On the Interplay Between Radial and Angular Reflection Emissivity from the Black Hole Accretion Disc.	415
Jiří Svoboda, Michal Dovčiak, René W. Goosmann and Vladimír Karas	
Critical-Curve Topologies of Triple Gravitational Lenses	423
Kamil Daněk and David Heyrovský	
Modified Gravity Theories and Dark Matter Models Tested by Galactic Rotation Curves	427
Marek Dwornik, Zoltán Keresztes and László Árpád Gergely	

Averaging Inside the LRS Family	431
Petr Kašpar, David Vrba and Otakar Svítek	
Effect of Magnetic Fields on Equatorial Circular Orbits in Kerr Spacetimes	435
Ignacio F. Ranea-Sandoval and Héctor Vucetich	
Exotic (Dark) Eigenspinors of the Charge Conjugation Operator and Cosmological Applications	439
Roldao da Rocha	
On Motion of the Magellanic Clouds in the Milky Way Gravitational Field	443
Zdeněk Stuchlík and Jan Schee	
Geodesic Chaos in Perturbed Black-Hole Fields	449
Petra Suková and Oldřich Semerák	
Gravitational Waveforms for Black Hole Binaries with Unequal Masses	455
Márton Tápai, Zoltán Keresztes and László Árpád Gergely	
 Part III Quantum Fields and Quantum Gravity	
Phenomenology of Quantum Gravity and its Possible Role in Neutrino Anomalies	461
Mario A. Acero and Yuri Bonder	
Loop Quantum Cosmology: Anisotropy and Singularity Resolution	469
Alejandro Corichi, Asieh Karami and Edison Montoya	
Tensor Operators in Loop Quantum Gravity	479
Maïté Dupuis and Florian Girelli	
Probability Distributions for Quantum Stress Tensors in Two and Four Dimensions	489
Christopher J. Fewster, L. H. Ford and Thomas A. Roman	
Spontaneous Breaking of Lorentz Symmetry for Canonical Gravity	497
Steffen Gielen	

The Transfer Matrix in Four-Dimensional Causal Dynamical Triangulations	505
Andrzej Görlich	
Plane Gravitational Waves and Flat Space in Loop Quantum Gravity	515
Franz Hinterleitner and Seth Major	
Unruh-DeWitt Detector on the BTZ Black Hole	523
Lee Hodgkinson and Jorma Louko	
On the Observability of Quantum-Gravitational Effects in the Cosmic Microwave Background	531
Claus Kiefer and Manuel Krämer	
Quantum Singularities in Conformally Static Spacetimes	539
Deborah A. Konkowski and Thomas M. Helliwell	
Granularity in Angle: Observability in Scattering Experiments.	547
Seth A. Major and Jake C. Zappala	
Signature Change in Loop Quantum Cosmology.	555
Jakub Mielczarek	
Quantum Fields in Gravity	563
Giovanni Acquaviva	
Classical and Quantum Scattering in Impulsive Backgrounds	567
Peter Aichelburg and Herbert Balasin	
Effective Vacuum Bianchi IX in Loop Quantum Cosmology	573
Alejandro Corichi, Asieh Karami and Edison Montoya	
Coupling Dimers to CDT to Obtain Higher Order Multicritical Behavior	579
Lisa Glaser	
A Sheet of Graphene: Quantum Field in a Discrete Curved Space . . .	583
Nikodem Szpak	

Relativity and Gravitation

100 Years after Einstein in Prague

Bičák, J.; Ledvinka, T. (Eds.)

2014, XXV, 590 p. 114 illus., 77 illus. in color.,

Hardcover

ISBN: 978-3-319-06760-5