

一般相対性理論の100年・全2巻

One Hundred Years of General Relativity

**From Genesis and Empirical Foundations to
Gravitational Waves, Cosmology and Quantum Gravity
(In 2 Volumes)**

Edited by: Wei-Tou Ni

National Tsing Hua University, Hsinchu, Taiwan

2017年7月出版 全2巻/1356ページ ¥45,530

The aim of this two-volume title is to give a comprehensive review of one hundred years of development of general relativity and its scientific influences. This unique title provides a broad introduction and review to the fascinating and profound subject of general relativity, its historical development, its important theoretical consequences, gravitational wave detection and applications to astrophysics and cosmology. The series focuses on five aspects of the theory:

- Genesis, Solutions and Energy
- Empirical Foundations
- Gravitational Waves
- Cosmology
- Quantum Gravity

Contents:

Volume 1:

Part 1: Genesis, Solutions and Energy:

- Chapter 1: A Genesis of Special Relativity (Valérie Messenger and Christophe Letellier)
- Chapter 2: Genesis of General Relativity — A Concise Exposition (Wei-Tou Ni)
- Chapter 3: Schwarzschild and Kerr Solutions of Einstein's Field Equation: An Introduction (Christian Heinicke and Friederich W Hehl)
- Chapter 4: Gravitational Energy for GR and Poincaré Gauge Theories: A Covariant Hamiltonian Approach (Chiang-Mei Chen, James Nester and Roh-Suan Tung)

Part 2: Empirical Foundations:

- Chapter 5: Equivalence Principles, Spacetime Structure and the Cosmic Connection (Wei-Tou Ni)
- Chapter 6: Cosmic Polarization Rotation: An Astrophysical Test of Fundamental Physics (Sperello di Serego Alighieri)
- Chapter 7: Clock Comparison Based on Laser Ranging Technologies (Étienne Samain)
- Chapter 8: Solar-System Tests of Relativistic Gravity (Wei-Tou Ni)
- Chapter 9: Pulsars and Gravity (R N Manchester)

Part 3: Gravitational Waves:

- Chapter 10: Gravitational Waves: Classification, Methods of Detection, Sensitivities, and Sources (Kazuaki Kuroda, Wei-Tou Ni and Wei-Ping Pan)
- Chapter 11: Ground-Based Gravitational-Wave Detectors (Kazuaki Kuroda)
- Chapter 12: Gravitational Wave Detection in Space (Wei-Tou Ni)

Volume 2:

Part 4: Cosmology:

- Chapter 13: General Relativity and Cosmology (Martin Bucher and Wei-Tou Ni)
- Chapter 14: Cosmic Structure (Marc Davis)
- Chapter 15: Physics of the Cosmic Microwave Background Anisotropy (Martin Bucher)
- Chapter 16: SNe Ia as a Cosmological Probe (Xiangcun Meng, Yan Gao and Zhanwen Han)
- Chapter 17: Gravitational Lensing in Cosmology (Toshifumi Futamase)
- Chapter 18: Inflationary Cosmology: First 30+ Years (Katsuhiko Sato and Jun'ichi Yokoyama)
- Chapter 19: Inflation, String Theory and Cosmic Strings (David Chernoff and S-H Henry Tye)

Part 5: Quantum Gravity:

Chapter 20: Quantum Gravity: A Brief History of Ideas and Some Outlooks (Steven Carlip, Dah-Wei Chiou, Wei-Tou Ni and Richard Woodard)

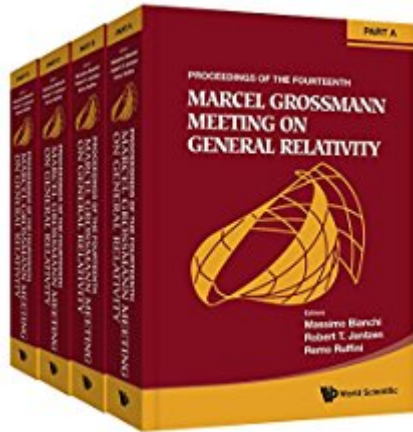
Chapter 21: Perturbative Quantum Comes of Age (R.P. Woodard)

Chapter 22: Black Hole Thermodynamics (S Carlip)

Chapter 23: Loop Quantum Gravity (Dah-Wei Chiou)

(World Scientific) ISBN 978981463

201708-2



第 14 回マルセル・グロスマン会議・全 4 巻 The Fourteenth Marcel Grossmann Meeting

On Recent Developments in Theoretical and
Experimental General Relativity, Astrophysics, and
Relativistic Field Theories
(In 4 Volumes)

Proceedings of the MG14 Meeting on General Relativity
University of Rome "La Sapienza", Italy, 12 – 18 July 2015

Edited by: Massimo Bianchi,

Università degli Studi di Roma "Tor Vergata", Italy, Robert T Jantzen, Villanova University, USA, and
Remo Ruffini, International Center for Relativistic Astrophysics Network (ICRANet), Italy &
University of Rome "La Sapienza", Italy

2017 年 10 月出版予定 全 4 巻 / 4200 ページ ハードカバー ¥181,390

The four volumes of the proceedings of MG14 give a broad view of all aspects of gravitational physics and astrophysics, from mathematical issues to recent observations and experiments. The scientific program of the meeting included 35 morning plenary talks over 6 days, 6 evening popular talks and 100 parallel sessions on 84 topics over 4 afternoons.

Volume A contains plenary and review talks ranging from the mathematical foundations of classical and quantum gravitational theories including recent developments in string theory, to precision tests of general relativity including progress towards the detection of gravitational waves, and from supernova cosmology to relativistic astrophysics, including topics such as gamma ray bursts, black hole physics both in our galaxy and in active galactic nuclei in other galaxies, and neutron star, pulsar and white dwarf astrophysics.

The remaining volumes include parallel sessions which touch on dark matter, neutrinos, X-ray sources, astrophysical black holes, neutron stars, white dwarfs, binary systems, radiative transfer, accretion disks, quasars, gamma ray bursts, supernovas, alternative gravitational theories, perturbations of collapsed objects, analog models, black hole thermodynamics, numerical relativity, gravitational lensing, large scale structure, observational cosmology, early universe models and cosmic microwave background anisotropies, inhomogeneous cosmology, inflation, global structure, singularities, chaos, Einstein-Maxwell systems, wormholes, exact solutions of Einstein's equations, gravitational waves, gravitational wave detectors and data analysis, precision gravitational measurements, quantum gravity and loop quantum gravity, quantum cosmology, strings and branes, self-gravitating systems, gamma ray astronomy, cosmic rays and the history of general relativity.

CONTENTS:

Accretion Processes Onto Black Holes: Observation and Modeling (*Sandip Chakrabarti*)

MHD Processes Near Compact Objects (*Sergey Moiseenko*)

Extended Theories of Gravity and Quantum Cosmology (*Salvatore Capozziello & Gabriele Gionti*)

Wormholes, Energy Conditions and Time Machines (*Francisco Lobo*)

Localized Self-gravitating Field Systems in the Einstein and Alternatives Theories of Gravity (*Dmitry Galtsov, Michael Volkov*)

Binary Black Holes as Sources of Multi-Messenger Astronomy and Black Holes in Binary Stellar Systems and Black Holes in Galactic Nuclei (*Pablo Laguna, Anatoly M Cherepaschuck & Stanislav O Alexeyev*)

Gravitational Fields with Sources: From Compact Objects to Black Holes (*José P S Lemos, Paolo Pani*)

Geometric Approaches to the Thermodynamics of Black Holes (*Hernando Quevedo*)

Regular and Analogue Black Holes (*Stefano Liberati, Carlos Barcelo*)
Hairy Black Holes and Black Holes in Higher Dimensions (Black Rings and Black Strings) (*Jutta Kunz, Burkhard Kleihaus*)
Compact Binaries and Strong-Field Tests of Gravity (*Paulo Freire, Michael Kramer*)
Numerical Analysis of Coalescing Binaries (*Masaru Shibata*)
Double Neutron Stars and Neutron Star-White Dwarf Binaries (*Thomas Tauris*)
End of White Dwarfs and Type Ia Supernova (*Yukikatsu Terada, Keiichi Maeda*)
Self-forces and Small-Mass-Ratio Binaries (*Adam Pound*)
Post-Newtonian and Analytic Approximations (*Alexandre Le Tiec*)
Interfacing Analytical and Numerical Relativity (*Ian Hinder*)
Black Hole Foils, Boson Stars (*Meike List*)
Scalar Fields in Cosmology (*Alfredo Macias*)
Cosmic Microwave Background Measurements (*Silvia Masi, Paolo De Bernardis*)
Cosmology with the Cosmic Microwave Background: Implications of Planck and Other Experiments in Temperature and Polarization (*Carlo Burigana, Hans Ulrik Nrgaard-Nielsen*)
Galaxy Clusters as Probes for Cosmology and Dark Matter (*Piero Rosati*)
Dark Energy and the Accelerating Universe (*Alexei Starobinsky, David Polarski*)
Inhomogeneous Cosmology (*Thomas Buchert, Alan Coley, David Wiltshire*)
Large Scale Structure and Statistics (*Thomas Buchert, Hagen Kleinert*)
Interacting Dark Matter (*Nikolaos E Mavromatos*)
Results and Strategies in Dark Matter Detection (*Belli Pierluigi*)
Sterile Neutrinos and Cosmology (*Mikhail Shaposhnikov, Alexey Boyarsky, Oleg Ruchayskiy*)
Self Gravitating Systems and Dark Matter (*Marco Merafina*)
Exact Solutions in Four and Higher Dimensions: Mathematical Aspects (*Georgy Alekseev*)
Theoretical Issues in GR (*Dieter Brill*)
Exact Solutions (Physical Aspects) (*Susan Scott*)
Semiclassical and Quantum Cosmology (*Paulo Vargas Moniz*)
Quantum Fields (*Vladimir Belinski*)
Cosmological Singularities and Asymptotics (*Cotsakis Spiros*)
Fast Radio Bursts: Observations, Ideas and Prospects (*Bing Zhang, Duncan Lorimer*)
The Energy Compositions and Acceleration Processes of GRB Jets (*Shiho Kobayashi, Stefano Covino*)
Cosmology from GRBs (*Lorenzo Amati, Massimo Della Valle*)
Photospheric Emission in GRBs (*Vereshchagin Gregory, Michael Burgess*)
GRBs and the Afterglow (*Chris Fryer, Grant Mathews*)
Statistics and Geometry of Weak Lensing Data (*Domenico Marinucci*)
Gravitational Lensing: Theory and Numerical Modeling (*Oleg Tsupko*)
Gravitational Physics of the Galactic Center (*Heino Falcke*)
New Developments in Blazar Research (*Paolo Giommi, Paolo Padovani*)
Sources of Gravitational Waves (*Andrew Melatos*)
Status of the Gravitational Wave Detectors (*David Blair, Jean-yves Vinet*)
LISA Pathfinder and Space-borne Gravitational Wave Detectors (*Massimo Bassan, Michele Armano*)
Experimental Tests of Fundamental Physics with High Energy Gamma Rays (*Alessandro De Angelis, Razmik Mirzoyan*)
High Energy Astrophysical Neutrinos Detection (*Antonio Capone*)
Future Prospects in High Energy Astrophysics (*Filippo Frontera, Aldo Morselli*)
Experiments and Missions in X and Gamma Ray (*Shuangnan Zhang, Oscar Adriani*)
History of Relativity and Cosmology (*Christian Bracco, Tilman Sauer*)
Observational Constraints on the Micro and Macroscopic Properties of Compact Stars (*Jorge A Rueda, Rodrigo Negreiros*)
New States of Matter and Strong Electromagnetic Fields in the Universe (*César A Zen Vasconcellos, Aurora Peràz Martinez*)
QCD Phase Diagram: From Nuclear Astrophysics to Heavy Ion Collisions (*Débora Peres Menezes*)
Massive Stars (*Pascal Chardonnet*)
Highly Magnetized Neutron Stars: Theories, Observations and Connection with Gamma-Ray Bursts (*Rea Nanda*)
Tests of Gravity with Atom Interferometers and Clocks (*Guglielmo Tino*)
Theory of Light Propagation in Gravitation Fields (*Volker Perlick*)
Experimental Gravitation (*Claus Laemmerzahl, Angela Di Virgilio*)
Variation of Fundamental Constants (*Victor Flambaum, Julian Berengut*)
GR in the Solar System (*Roberto Peron, Agnes Fienga*)
Dynamics of Extended Test Objects — Equations of Motion and Their Solution (*Eva Hackmann, Dirk Puetzfeld*)
Quantum Spacetime (*Gherardo Piacitelli*)

Quantum Field Theory on Curved Spacetime (*Gerardo Morsella*)
 Operator Algebras and Quantum Field Theory (*Gandalf Lechner, Giuseppe Ruzzi*)
 Loop Quantum Gravity, Quantum Geometry, Spin Foams (*Jerzy Lewandowski*)
 Quantum Gravity Phenomenology (*Giovanni Amelino-Camelia*)
 Loop Quantum Gravity: Cosmology and Black Holes (*Jorge Pullin, Parampreet Singh*)
 Strong (EM) Field Physics and Astrophysics and Ground Experiments and Astrophysical
 Observations in Strong Field Physics (*Kim Sang Pyo, Xue She-Sheng*)
 Supernova Explosions and Neutron Stars Dynamics and Numerical Simulations, Sn, and GRB,
 Connecting with Massive Sn (*Kostas Kokkotas, Valeri Chechetkin, Alexey Aksenov*)
 Branes and Instantons in String Theory (*Alberto Lerda*)
 Black Holes in String Theory (Gianguido Dall'agata)
 Gauge/Gravity and Related Correspondences (*Rubik Poghossian*)
 String Phenomenology & Cosmology (*Gianfranco Pradisi*)
 The Status of Magnetic White Dwarfs and White Dwarfs in Binaries and the Role of Gravitational
 Waves (*Enrique García-Berro; Oliveira Kepler Souza; Mukremin Kilic*)
 Origin and Physics of Soft Gamma-Ray Repeaters and Anomalous X-Ray Pulsars (*Manuel Malheiro*)
 Proceedings of the Fourteenth Italian-Korean Meeting on Relativistic Astrophysics (IK14) July 20–24,
 2015 Icranet, Pescara, Italy (*Hyung Won Lee, Gregory Vereshchagin and She-Sheng Xue*)
 (World Scientific) ISBN: 9789813226593

201708-3



フェルミラブ：アメリカ物理学会史跡 Fermilab at 50

Edited by: **Swapan Chattopadhyay** (Northern Illinois University, USA & Fermilab), **Joseph Lykken** (Fermilab)

2017年12月出版予定 ハードカバー 300ページ D58 ¥10,640.
 (World Scientific) ISBN 9789813227453

Fermilab — originally called the National Accelerator Laboratory — began operations in Illinois on June 15, 1967. Operated and managed by The University of Chicago and Universities Research Association, LLC for the US Department of Energy, it has the distinction of being the only US national laboratory solely dedicated to the advancement of high-energy particle physics, astrophysics and cosmology. It has been the site of major discoveries and observations: the top and bottom quarks; the tau neutrino; direct CP violation in kaon decays; a quasar 27 billion light years away from us; origin of high-energy cosmic rays; and confirmation of the evidence of dark energy, among others. For 25 years it operated the world's highest energy particle collider, the Tevatron. Fermilab contributed collaboratively to the Tevatron's successor, the Large Hadron Collider, which discovered the Higgs boson in 2012. Fermilab's core competencies in accelerators, superconducting technologies, detectors and computing have positioned the laboratory for a bright future at the frontiers of science. Today Fermilab scientists, engineers, technicians together with partners from 50 countries are working to explore the nature of the elusive neutrino, enable future x-ray photon science facilities, and construct and exploit higher-energy and higher-intensity particle accelerators. Fermilab is a designated "American Physical Society Historic Site".



有限会社 **ブックマン**

〒113-0033

東京都文京区本郷3丁目4-8-501

Tel 03-5684-0561 Fax 03-5684-0562

E-Mail : sales@e-bookman.co.jp

ホームページ : <http://e-bookman.co.jp/>

ご注文・お問い合わせは下記へお申し
込み下さい。

(有)ブックマン

関西・中部・東海統括事務所

Tel 052-740-1829

Fax 052-782-4771

chubu@e-bookman.co.jp / kansai@e-bookman.co.jp

広島海外株

Tel 082-236-3522

Fax 082-236-3530

books@dear.ne.jp

福岡海外株

Tel 092-741-2685

Fax 092-741-8418

fkaigai@lime.ocn.ne.jp