Curriculum Vitae

March 9, 2021

Name **Hisa-aki SHINKAI, Dr.Sci.**

Present position

Professor, Osaka Institute of Technology, Japan (2012 April)

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Osaka Institute of Technology
Kitayama 1-79-1, Hirakata, Osaka 573-0196, Japan

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Education

Undergraduate Course of Physics, Waseda University, Tokyo, Japan
Attended from April 1986 to March 1990.
B.Sci., Waseda University, March 1990.

Graduate School, Department of Physics, Waseda University, Japan
Attended from April 1990 to March 1995.
M.Sci., Waseda University, March 1992.
Ph.D.Sci., Waseda University, March 1995.
Ph.D. Supervisor – Kei-ichi Maeda.

Employment

April 1994 – October 1996
Assistant Professor, Department of Physics,
Waseda University, Tokyo, Japan

November 1996 – August 1999
Postdoctoral Associate,
Department of Physics, Washington University, St. Louis, Missouri, USA
(advisors: Prof. Clifford M. Will, Prof. Wai-Mo Suen)

September 1999 – August 2001
JSPS Research Fellow Abroad; Postdoctral Scholar
(Japan Society for the Promotion of Science)
Centre for Gravitational Physics and Geometry, Department of Physics,
The Pennsylvania State University,
University Park, Pennsylvania, USA
(host: Prof. Abhay Ashtekar)

April 2001 – December 2003
RIKEN Special Postdoctoral Researcher
Computational Science Division,
Institute of Physical and Chemical Research (RIKEN)
Wako, Saitama, 351-0198 Japan
(advisor: Dr. Toshikazu Ebisuzaki)

January 2004 – January 2006
Senior Scientist
Research Department, Inamori Foundation
Shimogyo-ku, Kyoto, 600-8411 Japan

January 2004 – present
Visiting Researcher
Ebisuzaki Computational Astrophysics group,
Institute of Physical and Chemical Research (RIKEN)
Wako, Saitama, 351-0198 Japan

April 2006 – present
Professor (April 2012 –)
Director of International Center (April 2013 –March 2017)
Associate Professor (April 2006 – March 2012)
Faculty of Information Science and Technology, Osaka Institute of Technology
Kitayama 1-79-1, Hirakata, Osaka 573-0196, Japan

Position held (short period)

July 1990 – September 1990
Fellow of International Association for Exchanging Students for Technical Experiences (IAESTE), visiting Delft University, The Netherlands

May and September 1993
Short-period Research Fellow at Yukawa Institute for Theoretical Physics,
Kyoto University, Japan

October 2002
Visiting Associate in Physics in Division of Physics, Mathematics and Astronomy,
California Institute of Technology, USA

September 2012 –
Part-time Lecturer, Mukogawa Woman's University, Hyogo, Japan

Professional Affiliations

Chair of the board
KAGRA Scientific Congress (2017/8–2019/8, 2019/8–2021/8),
Referee contributions for
Physical Review Letters (APS),
Physical Review D (APS),
Classical and Quantum Gravity (IoP),
Journal of Physics: Conference Series (IoP),
Progress for Theoretical Physics (JPS),

Journal of the Physics Society Japan (JPS),
Journal of Applied Physics Society Japan (JAPS),
European Physical Journal C,
Space Science Reviews,
and *General Relativity and Gravitation* (GRG)

Member of *Physical Society of Japan*
Astronomical Society of Japan
Japan Society for Industrial and Applied Mathematics
American Physical Society (USA)
American Association of Physics Teacher (USA)
Institute of Physics (UK)
International Society on General Relativity and Gravitation
Rironkon (Japanese Theoretical Astrophysicists)
Soryushiron group (Japanese Particle Physicists)
The History of Science Society of Japan
Japan Society for Teaching and Popularization of Astronomy

Editorial board of
New book review column in *Butsuri* journal (Physical Society of Japan),
2001-2003

Funded as the principal investigator

- Grant-in-Aid for Scientific Research Fund of the Ministry of Education, Science, Sports and Culture No. 07854014 (1995)
  1 M yen (∼$10K), for personal researches

- Waseda University Grant for Special Research Projects (1995,1996)
  750,000 yen (∼$7,500), for personal researches (1995)
  400,000 yen (∼ $4,000), for personal researches (1996)

- Grant-in-Aid for Scientific Research Fund of Japan Society for the Promotion of Science, No. 14740179 (2002).
  Several New Approaches to Numerical Simulations in General Relativity
  3.5 M yen (∼$30K), for personal researches (2002/4-2005/3)

- Osaka Institute of Technology Grant for Special Research Projects (2007)
  500,000 yen (∼$4,500), for personal researches (2007)

- Grant-in-Aid for Scientific Research Fund of Japan Society for the Promotion of Science, No. 22540293 (2010).
  Numerical Investigations of Singularities in Higher-Dimensional Space-time
  3.4 M yen (∼$37K), for personal researches (2010/4-2014/3)

- Grant-in-Aid for Scientific Research Fund of Japan Society for the Promotion of Science, No. 25400277 (2013).
  Non-linear dynamics in Extended Gravity Theories
  3.8 M yen (∼$38K), for personal researches (2013/4-2018/3)

- Grant-in-Aid for Scientific Research Fund of Japan Society for the Promotion of Science, No. 19H01901 (2019).
  New directions in gravitational-wave data analysis: both in computing algorithms and hardwares including its outreach activities
  13 M yen (∼$120K), for personal researches (2019/4-2024/3)

- Grant-in-Aid for Scientific Research Fund of Japan Society for the Promotion of Science, No. 19K21621 (2019).
  Establishment of cultural astronomy: Acceleration and integration of arts and sciences on cultural heritage, astronomical phenomena, and mathematical understanding
  4.8 M yen (∼$45K), for personal researches (2019/4-2022/3)

Research Interests [see Publications (articles)]

- General Relativistic Effects
  - Gravitational Collapse [7, 36, 37, 43]
  - Relativistic Stars
    - Neutron Stars [12]
    - Boson Stars [9, 10]
    - Black Holes [18, 20, 27, 46]
    - Wormholes [22, 41, 43]
  - Gravitational Wave [7, 20, 27, 42, 46]
- Cosmology
  - Inflationary Universe [2, 3, 5]
  - Higher dimensional models [15, 18, 26, 36, 37, 43]
- The Einstein equations
  - Exact solutions [4]
  - Characteristic formulations [4, 20]
  - Cannonical formulations [4, 6, 19, 21, 34]
  - Hyperbolic formulations [11, 14, 13, 16, 17, 19]
  - Asymptotically-constrained systems [17, 19, 21, 23, 24, 26, 33, 35, 39, 40]
  - Testbeds for numerical relativity [25, 33, 39]
- Theory of gravitation:
  - Connection formulation [6, 8, 11, 14, 13, 16, 17, 34]
  - Scalar-Tensor theory [7, 9, 10]
  - Post-Newtonian approximation [12]
  - Higher dimensional equations [26, 34, 36, 41, 43]
  - Gravitational redshift [49]
- Observation of Gravitational Wave
  - TAMA[28, 29, 30, 32]
  - DECIGO[31, 38, 54]
  - KAGRA[44, 45, 47, 50, 52, 53]
  - LIGO-Virgo-KAGRA[51]
- History of Physics, Astronomy

List of Publications

Articles in Refereed Journals

1. Bistability in an Ising model with non-Hamiltonian dynamics
with J.R.Heringa, H.W.J.Blöte, A.Hoogland and R.K.P.Zia
Physical Review **B 45** (1992) 5707-5709

2. Can gravitational waves prevent inflation?
with K. Maeda
Physical Review **D 48** (1993) 3910-3913

3. Generality of inflation in a planar universe
with K. Maeda
Physical Review **D 49** (1994) 6367-6378

4. A '3+1' method for finding principal null directions
with L. Gunnarsen and K. Maeda
Classical Quantum Gravity **12** (1995) 133-140

5. Dynamics of topological defects and inflation
with N. Sakai, T. Tachizawa and K. Maeda
Physical Review **D 53** (1996) 655-661

6. Constraints and reality conditions in the Ashtekar formulation of general relativity
with G.Yoneda
Classical Quantum Gravity **13** (1996) 783-790

7. Gravitational waves in Brans-Dicke theory : Analysis by test particles around a Kerr black hole
with M. Saijo and K. Maeda
Physical Review **D 56** (1997) 785-797

8. Tric for passing degenerate metrics in the Ashtekar formulation
with G. Yoneda and A. Nakamichi
Physical Review **D 56** (1997) 2086-2093

9. Generation of scalar-tensor gravity effects in equilibrium state boson stars
with G.L. Comer
Classical Quantum Gravity **15** (1998) 669-688

10. Dynamical evolution of boson stars in Brans-Dicke theory
with J. Balakrishna
Physical Review **D 58** (1998) 044016 (13 pages)

11. Symmetric hyperbolic system in the Ashtekar formulation
with G. Yoneda
Physical Review Letters **82** (1999) 263-266

12. Truncated post-Newtonian neutron star model
Physical Review **D 60** (1999) 067504 (4 pages)

13. Asymptotically constrained and real-valued system based on Ashtekar's variables
with G. Yoneda
Physical Review **D 60** (1999) 101502 (Rapid Communication, 5 pages)

14. Constructing hyperbolic systems in the Ashtekar formulation of general relativity
with G. Yoneda
Int. J. Mod. Phys. **D 9** (2000) 13-34

15. Fate of the Kaluza-Klein bubbles
with T. Shiromizu
Physical Review **D 62** (2000) 024010 (8 pages)

16. Hyperbolic formulations and numerical relativity: experiments using Ashtekar's connection variables
with G. Yoneda
Classical Quantum Gravity **17** (2000) 4799-4822

17. Hyperbolic formulations and numerical relativity II: Asymptotically constrained systems of Einstein equations
with G. Yoneda
Classical Quantum Gravity **18** (2001) 441-462

18. Charged brane world black holes
with A. Chamblin, H. S. Reall and T. Shiromizu
Physical Review **D 63** (2001) 064015 (11 pages)

19. Constraint propagation in the family of ADM systems
with G. Yoneda,
Physical Review **D 63** (2001) 124019 (9 pages)

20. Quasi-spherical approximation for rotating black holes
with S.A. Hayward
Physical Review **D 64** (2001) 044002 (8 pages)

21. Adusted ADM systems and their expected stability properties: constraint propagation analysis in Schwarzschild spacetime
with G. Yoneda
Classical Quantum Gravity **19** (2002) 1027-1049

22. Fate of the first traversible wormhole: black-hole collapse or inflationary expansion
with S.A. Hayward
Physical Review D **66** (2002) 044005 (9 pages)

23. Advantages of modified ADM formulation: constraint propagation analysis of Baumgarte-Shapiro-Shibata-Nakamura system
with G. Yoneda
Physical Review D **66** (2002) 124003 (10 pages)

24. Diagonalizability of constraint propagation matrix
with G. Yoneda
Classical Quantum Gravity **20** (2003) L31-36 (Letter)

25. Toward standard testbeds for numerical relativity
with M. Alcubierre, G. Allen, C. Bona, D. Fiske, T. Goodale, F.S. Guzman, I. Hawke, S. Hawley, S. Husa, M. Koppitz, C. Lechner, D. Pollney, D. Rideout, E. Schnetter, E. Seidel, D. Shoemaker, B. Szilagyi, R. Takahashi, and J. Winicour
(Mexico Numerical Relativity Workshop 2002 Participants),
Classical Quantum Gravity **21** (2004) 589-613.

26. Constraint propagation in $(N+1)$-dimensional space-time
with G. Yoneda
Gen. Rel. Grav. **36** (2004) 1931-1937

27. Gravitational waves from merging intermediate-mass black holes
with T. Matsubayashi and T. Ebisuzaki
Astrophys. J. **614** (2004) 864-868

28. Observation results by the TAMA300 detector on gravitational wave bursts from stellar-core collapses
TAMA collaboration
Physical Review D **71** (2005) 082002 (17 pages)

29. Upper limits from the LIGO and TAMA detectors on the rate of gravitational-wave bursts
with LIGO Scientific Collaboration, TAMA Collaboration
Physical Review D **72** (2005) 122004 (16 pages)

30. Joint LIGO and TAMA300 Search for Gravitational Waves from Inspiralling Neutron Star Binaries
with LIGO Scientific Collaboration, TAMA Collaboration
Physical Review D **73** (2006) 102002 (10 pages)

31. The Japanese space gravitational wave antenna: DECIGO
DECIGO collaboration
Class. Quantum Grav. 23 (2006) S125-S132

32. Results of the search for inspiraling compact star binaries from TAMA300's observation in 2000-2004
with TAMA Collaboration
Physical Review D **74** (2006) 122002 (8 pages)

33. Numerical Experiments of adjusted BSSN systems for controlling constraint violations
with K. Kiuchi
Physical Review D **77** (2008) 044010 (11 pages)

34. $N+1$ formalism in Einstein-Gauss-Bonnet gravity
with T. Torii
Physical Review D **78** (2008) 084037 (13 pages)

35. Formulations of the Einstein equations for numerical simulations
Journal of Korean Physical Society, 54 (2009) 2513-2528, available as arXiv:0805.0068

36. Black Objects and Hoop Conjecture in Five-dimensional Space-time
with Y. Yamada
Class. Quantum Grav. 27 (2010) 045012 (15 pages)

37. Formation of naked singularities in five-dimensional space-time
with Y. Yamada
Physical Review D **83** (2011) 064006 (5 pages)

38. The Japanese space gravitational wave antenna: DECIGO
DECIGO collaboration
Class. Quantum Grav. 28 (2011) 094011 (12 pages)

39. Constraint propagation of C^2-adjusted formulation – Another recipe for robust ADM evolution system –
with T. Tsuchiya and G. Yoneda
Physical Review D **83** (2011) 064032 (10 pages)

40. Constraint propagation of C^2-adjusted formulation II – Another recipe for robust BSSN evolution system –
with T. Tsuchiya and G. Yoneda
Physical Review D **85** (2012) 044018 (12 pages)

41. Wormholes in higher dimensional space-time: Exact solutions and their linear stability analysis
with T. Torii
Physical Review D **88** (2013) 064027 (6 pages)

42. Gravitational waves from merging intermediate-mass black holes : II Event rates at ground-based detectors
with N. Kanda and T. Ebisuzaki
Astrophys. J. **835** (2017) 276 (8 pages)

43. Nonlinear dynamics in the Einstein-Gauss-Bonnet gravity
with T. Torii
Physical Review D **96** (2017) 044009 (14 pages)

44. Construction of KAGRA: an Underground Gravitational Wave Observatory
KAGRA Collaboration
Prog. Theor. Exp. Phys. (2018) 013F01 [arXiv:1712.00148]

45. KAGRA: 2.5 Generation Interferometric Gravitational Wave Detector
KAGRA collaboration
Nature Astronomy 3 (2019) 35 [arXiv:1811.08079]

46. INO: Interplanetary Network of Optical Lattice Clocks
with T. Ebisuzaki , H. Katori , A. Noda , J. Makino , and T. Tamagawa
International J. of Modern Physics D 28 (2019) 1940002 [arXiv:1809.10317],
`https://doi.org/10.1142/S0218271819400029`

47. First cryogenic test operation of underground km-scale gravitational-wave observatory KAGRA
KAGRA collaboration
Class. Quant. Grav. 36 (2019) 165008 [arXiv:1901.03569],
`https://doi.org/10.1088/1361-6382/ab28a9`

48. Comparison of various methods to extract ringdown frequency from gravitational wave data
with H. Nakano , T. Narikawa, K. Oohara, K. Sakai, H. Takahashi, T. Tanaka,

N. Uchikata, S. Yamamoto, and T. S. Yamamoto
Physical Review D 99 (2019) 124032 [arXiv:1811.06443],
https://doi.org/10.1103/PhysRevD.99.124032

49. Test of general relativity by a pair of transportable optical lattice clocks
with M. Takamoto, I. Ushijima, N. Ohmae, T. Yahagi, K. Kokado, and H. Katori
Nature Photonics 14 (2020) 411
https://doi.org/10.1038/s41566-020-0619-8

50. Application of the independent component analysis to the iKAGRA data
KAGRA collaboration
Prog. Theor. Exp. Phys. 2020 (2020), 053F01
https://doi.org/10.1093/ptep/ptaa056

51. Prospects for observing and localizing gravitational-wave transients with Advanced LIGO, Advanced Virgo and KAGRA
LIGO-Virgo-KAGRA collaboration
Living Reviews in Relativity 23 (2020) 3 [arXiv:1304.0670]
https://link.springer.com/article/10.1007/s41114-020-00026-9

52. Overview of KAGRA : KAGRA science
KAGRA collaboration
Prog. Theor. Exp. Phys. (2020) ptaa120 [arXiv:2008.02921]
https://doi.org/10.1093/ptep/ptaa120

53. Overview of KAGRA : Detector design and construction history
KAGRA collaboration
Prog. Theor. Exp. Phys. (2020) ptaa125 [arXiv:2005.05574]
https://doi.org/10.1093/ptep/ptaa125

54. Current status of space gravitational wave antenna DECIGO and B-DECIGO
DECIGO collaboration
Prog. Theor. Exp. Phys. (2021) ptab019 [arXiv:2006.13545]
https://doi.org/10.1093/ptep/ptab019

55. Overview of KAGRA : Calibration, detector characterization, physical environmental monitors, and the geophysics interferometer
KAGRA collaboration
Prog. Theor. Exp. Phys. (2021) ptab018 [arXiv:2009.09345]
https://doi.org/10.1093/ptep/ptab018

56. Vibration isolation systems for the beam splitter and signal recycling mirrors of the KAGRA gravitational wave detector
KAGRA collaboration
Class. Quant. Grav. 38 (2021) 065011
https://iopscience.iop.org/article/10.1088/1361-6382/abd922

57. Gravitational-wave physics and astronomy in the 2020s and 2030s
M. Bailes, B. K. Berger, P. R. Brady, M. Branchesi, K. Danzmann, M. Evans, K. Holley-Bockelmann, B. R. Iyer, T. Kajita, S. Katsanevas, M. Kramer, A. Lazzarini, L. Lehner, G. Losurdo, H. Lueck, D. E. McClelland, M. A. McLaughlin, M. Punturo, S. Ransom, S. Raychaudhury, D. H. Reitze, F. Ricci, S. Rowan, Y.

Saito, G. H. Sanders, B. S. Sathyaprakash, B. F. Schutz, A. Sesana, H. Shinkai, X. Siemens, D. H. Shoemaker, J. Thorpe, J. F. J. van den Brand, and S. Vitale
accepted for publication in Nature Physics Review (2021)

Review Articles

1. Re-formulating the Einstein equations for stable numerical simulations: Formulation Problem in Numerical Relativity
with G. Yoneda
For a part of the book *Recent Progress in Astronomy and Astrophysics* (Nova Science Publ., New York, 2004), available as gr-qc/0209111

2. 数値相対論における定式化問題 一般相対論における数値シミュレーションを安定化させる指針の探求
with 米田元
「応用数理」日本応用数理学会学会誌， vol.15, No.1 (2005 年 3 月)，p2-15

3. 重力波の直接検出とデータ解析
システム制御情報学会誌，vol.62, No.9 (2018 年 9 月)，p370-375

Lectureships

1. Introduction to Numerical Relativity
Four-hour invited lecture at Asia-Pacific Center for Theoretical Physics *Winter School on Gravitation and Cosmology* (Ewha Womans University, Seoul, Korea, January, 2003)
Lecture note is available at `http://www.oit.ac.jp/is/~shinkai/lecture/winterAPCTP/`

2. Formulation Problem in Numerical Relativity
Two-hour invited lecture at Asia-Pacific Center for Theoretical Physics (APCTP) *Winter School on Black Hole Astrophysics 2008* (Korea Astronomy & Space Science Institute (KASI), Daejeon, Korea, January, 2008)
Lecture note is available at `http://www.oit.ac.jp/is//~shinkai/lecture/winterAPCTP/`

3. Numerical Approaches in General Relativity (in Japanese)
Two-days invited lecture at Kinki University, Osaka, Japan
Lecture note is available at
`http://www.oit.ac.jp/is/~shinkai/lecture/seminar2011_KinkiU`

4. Why and How we know there are blackholes Introduction to Einstein's theory
International Science School 2016, August 6, 2016, at Yokosuka Research Park
Lecture note is available at
`http://www.oit.ac.jp/is/~shinkai/201608school/`

Plenary/Invited talks at International Conferences

1. Post-Newtonian neutron star binary initial data for numerical relativity
Initial data for black hole binary, Invited talk [Berlin, June 1999]

2. Re-formulate the Einstein equations for stable numerical simulations
The 12th Workshop on General Relativity and Gravitation, [Tokyo Univ., Nov. 2002] (Proceedings, p137-151)

3. Introduction to Numerical Relativity
Four-hour invited lecture at Asia-Pacific Center for Theoretical Physics *Winter School on Gravitation and Cosmology* (Ewha Womans University, Seoul, Korea, January, 2003)

4. Controlling constraints in general relativity
(invited talk at Minisymposia, "Numerical Methods for PDEs with Cosntraints")
The 5th International Congress on Industrial and Applied Mathematics [Sydney, Australia, July 2003]

5. Formulation Problem in Numerical Relativity
   Two-hour invited lecture at Asia-Pacific Center for Theoretical Physics (APCTP) *Winter School on Black Hole Astrophysics 2008* (Korea Astronomy & Space Science Institute (KASI), Daejeon, Korea, January, 2008)

6. Wormhole dynamics
   The workshop on theories and possibilities of observations of wormholes, [Rikkyo U., Japan, October 2012]

7. Status of KAGRA
   H. Shinkai on behalf of the KAGRA collaboration
   The LIGO-Virgo collaboration meeting, [Lake Geneva, Wisconsin, US, March 2019]

8. Latest status of KAGRA
   H. Shinkai on behalf of the KAGRA collaboration
   22nd International Conference on General Relativity and Gravitation & 13th Edoardo Amaldi Conference on Gravitational Waves, [Valencia, Spain, July 2019]

9. Status of KAGRA
   H. Shinkai on behalf of the KAGRA collaboration
   The LIGO-Virgo collaboration meeting, [Warsaw, Poland, September 2019]

10. Status of KAGRA
    H. Shinkai on behalf of the KAGRA collaboration
    The LIGO-Virgo-KAGRA collaboration meeting, [Wisconsin, US, March 2020] (online meeting)

11. Status of KAGRA
    H. Shinkai on behalf of the KAGRA collaboration
    The LIGO-Virgo-KAGRA collaboration meeting, [September 2020] (online meeting)

12. Introduction to KAGRA
    H. Shinkai on behalf of the KAGRA collaboration
    The 7th KAGRA International Workshop, [Taiwan, December 2020] (online meeting)

Presentations at International Conferences / Workshops

1. Gravitational waves in expanding Universes with cosmological constant
   H. Shinkai and K. Maeda
   The Waseda Symposium on *Quantum Physics and the Universe*, (Pergamon Press Ltd, 1993, Vistas in Astronomy, 37, p.449)

2. Cosmic no hair conjecture in a planar universe
   H. Shinkai and K. Maeda
   The Yamada Conference on *Evolution of the Universe and its Observational Quest*, (Universal Academy Press, 1994, The Proceedings ed. by K.Sato, p.533)

3. Inflation in a planar universe
   H. Shinkai and K. Maeda
   The 7th Marcel Grossmann Meeting on *General Relativity* [Stanford Univ., August 1994] (World Scientific, 1997, should be published)

4. Numerical relativity using Ashtekar formulation
   H. Shinkai and G. Yoneda
   The 14th International Conference on General Relativity and Gravitation [Florence, August 1995]

5. Dynamics of topological defects near the Planck scale
   N. Sakai, H. Shinkai, T. Tachizawa and K. Maeda
   The 14th International Conference on General Relativity and Gravitation [Florence, August 1995]

6. Weyl scalar Ψ_i in 3+1 numerical spacetime
   H. Shinkai
   The 7th Gregynog Workshop on Numerical Relativity, [Gregynog, August 1995]

7. Dynamics in the Ashtekar gravity
   H. Shinkai and G. Yoneda
   The 18th Texas Symposium on Relativistic Astrophysics, [Chicago, December 1996]

8. On reality conditions for Ashtekar variables and a trick of passing a degenerate point
   A. Nakamichi, G. Yoneda and H. Shinkai
   The 18th Texas Symposium on Relativistic Astrophysics, [Chicago, December 1996]

9. Can we detect Brans-Dicke scalar gravitational waves in gravitational collapse?
   H. Shinkai, M. Saijo and K. Maeda
   The 18th Texas Symposium on Relativistic Astrophysics, [Chicago, December 1996] (World Scientific, 1998, p619)

10. Lorentzian dynamics in Ashtekar gravity
    H. Shinkai and G. Yoneda
    The 8th Marcel Grossmann Meeting, [Jerusalem, June 1997] (ed. by Tsvi Piran, World Scientific, 1999, p774), gr-qc/9710074

11. Newtonian and post-Newtonian binary neutron star mergers
    H. Shinkai, W-M. Suen, F.D. Swesty, M. Tobias, E.Y.M. Wang, and C. Will
    The 8th Marcel Grossmann Meeting, [Jerusalem, June 1997] (ed. by Tsvi Piran, World Scientific, 1999, p771), gr-qc/9710073

12. Dynamical evolution of boson stars
    H. Shinkai, J. Balakrishna, G.L. Comer, E. Seidel and W-M. Suen
    The Numerical Astrophysics 98 [Tokyo, March 1998] (Kluwer Academic, 1999, p289)

13. Hyperbolic systems in the Ashtekar formulation – asymptotically stable and real-valued system as its application
    H. Shinkai and G. Yoneda
    Physics of strong gravitational fields, poster [UCSB, June 1999]

14. Post-Newtonian initial data approach for neutron star binary problem
    H. Shinkai, W-M. Suen and C.M. Will
    YKIS99 Black Holes and Gravitatational Waves, poster [Kyoto, June 1999]

15. Hyperbolic formulations and numerical relativity
    H. Shinkai and G. Yoneda
    The 9th Marcel Grossmann Meeting, [Rome, July 2000] (Proceedings, p 1717-1718 (eds by V.G. Gurzadyan, R.T. Jantzen, R. Ruffini, World Scientific, 2003))

16. Will hyperbolic formulations help numerical relativity?
    H. Shinkai and G. Yoneda
    The 10th Workshop on General Relativity and Gravitation, [Osaka, September 2000] (Proceedings, p.80-86)

17. Quasi-spherical approximation for rotating black holes
    H. Shinkai and S. Hayward
    Workshop on Astrophysical Sources for Ground-Based Gravitational Wave Detectors, poster [Drexel Univ. Philadelphia, 2000 October]

18. Quasi-spherical approximation for rotating black holes
    H. Shinkai and S.A. Hayward
    The 16th International Conference on General Relativity and Gravitation [South Africa, July 2001]

19. Cosnstraint propagation in the family of ADM systems
H. Shinkai and G. Yoneda
The 16th International Conference on General Relativity and Gravitation [South Africa, July 2001]

20. Adjusted Systems – adding constraints in RHS
H. Shinkai
Workshop on Numerical Relativity 2002 [South Africa, July 2001]

21. Adjusted ADM systems and their expected stability properties
H. Shinkai and G. Yoneda
The 11th Workshop on General Relativity and Gravitation, [Waseda Univ., January 2002] (Proceedings, p223-227)

22. Systematic understanding of asymptotical stability via constraint propagation analysis — Proposals of Adjusted ADM Systems and Adjusted BSSN Systems —
H. Shinkai (60 min talk)
Formulations of Einstein Equations for Numerical Relativity [Mexico City, May 2002]

23. Re-formulations of Einstein equations for stable numerical simulations
H. Shinkai (15 min talk)
International Conference on Theoretical Physics [Paris, UNESCO July 2002]

24. Controlling constraints in free evolution systems
H. Shinkai (30 min talk)
Gravitation: A Decennial Perspective, [Penn State Univ., June 2003]

25. Gravitational Waves from merging intermmediate-mass black-holes
H. Shinkai, T. Matsubayashi and T. Ebisuzaki (poster)
Stellar-Mass, Intermediate-Mass, and Supermassive Black Holes, [Kyoto, October 2003]

26. Constraint propagation analysis and adjusted systems
H. Shinkai and G. Yoneda
Numerical Relativity: Formulation Problem II, [Mexico, December 2003]

27. Formulation Problem of Numerical Relativity
G. Yoneda and H. Shinkai
Tenth International Conference on Hyperbolic Problems [Osaka, September 2004]

28. Constraint propagation revisited (poster)
H. Shinkai and G. Yoneda
The 16th Workshop on General Relativity and Gravitation, [Niigata, November 2006]

29. Controlling constraint violation using adjusted ADM systems (poster)
H. Shinkai and G. Yoneda
The 18th International Conference on General Relativity and Gravitation, [Sydney, July 2007]

30. Controlling constraint violations in numerical relativity (poster)
H. Shinkai and G. Yoneda
The 8th Asia-Pacific International Conference on Gravitation and Astrophysics, [Nara, Japan, August 2007]

31. Application of adjusted BSSN systems to Apples-with-Apples tests (poster)
K. Kiuchi and H. Shinkai
The 8th Asia-Pacific International Conference on Gravitation and Astrophysics, [Nara, Japan, August 2007]

32. Application of adjusted BSSN systems to Apples-with-Apples tests (poster)
K. Kiuchi and H. Shinkai
The 8th Asia-Pacific International Conference on Gravitation and Astrophysics, [Nara, Japan, August 2007]

33. N+1 formalism in Einstein-Gauss-Bonnet gravity (poster)
H. Shinkai and T. Torii
The 17th Workshop on General Relativity and Gravitation (JGRG17), [Nagoya, Japan, December 2007]

34. Towards the dynamics in Einstein-Gauss-Bonnet gravity: Initial Value Problem (poster)
H. Shinkai and T. Torii
The 18th Workshop on General Relativity and Gravitation (JGRG18) , [Hiroshima, Japan, December 2008]

35. Apparent Horizon Formation in Five-dimensional Spacetime (poster)
Y. Yamada and H. Shinkai
The 18th Workshop on General Relativity and Gravitation (JGRG18) , [Hiroshima, Japan, December 2008]

36. Constraint Propagation of C^2-adjusted Equations – Another Recipe for Robust Evolution Systems –(poster)
T. Tsuchiya, G. Yoneda and H. Shinkai
The 19th Workshop on General Relativity and Gravitation (JGRG19) , [Tokyo, Japan, December 2009]

37. Black Objects and Hoop Conjectue in Five-dimensional Space-time (poster)
Y. Yamada and H. Shinkai
The 19th Workshop on General Relativity and Gravitation (JGRG19) , [Tokyo, Japan, December 2009]

38. Black Objects and Hoop Conjectue in Five-dimensional Space-time
H. Shinkai and Y. Yamada
The 19th International Conference on General Relativity and Gravitation, [Mexico City, Mexico, July 2010]

39. Constraint Propagation of C^2-adjusted Equations — Another Recipe for Robust Evolution Systems — (poster)
H. Shinkai, T. Tsuchiya and Y. Yamada
The 19th International Conference on General Relativity and Gravitation, [Mexico City, Mexico, July 2010]

40. Gravitational Collapse in Five-dimensional Space-time (poster)
Y. Yamada and H. Shinkai
The 20th Workshop on General Relativity and Gravitation (JGRG20) , [Kyoto, Japan, September 2010]

41. Gravitational Collapse in Five-dimensional Space-time (poster)
Y. Yamada and H. Shinkai
The 2010 Cosmo/CosPA International Workshop (Cosmo/CosPA 2010) , [Tokyo, Japan, September 2010]

42. Gravitational Collapse in Five-dimensional Space-time (25min talk)
H. Shinkai
The 2011 Shanghai Asia-Pacific school on Gravitation, [Shanghai, China, February 2011]
Int. J. Mod. Phys. Conf. Ser. 7 (2012) pp. 148-157

43. Gravitational collapse of ring objects in five-dimensional space-time (poster)
Y. Yamada and H. Shinkai
The 21th Workshop on General Relativity and Gravitation (JGRG21) , [Tohoku U., Japan, September 2011]

44. Constraint propagation and constraint-damping in the C2-adjusted formulation
T. Tsuchiya, G. Yoneda and H. Shinkai
The 21th Workshop on General Relativity and Gravitation (JGRG21) , [Tohoku U., Japan, September 2011]

45. Numerical Study of 5-dimensional Gravitational Collapses
Y. Yamada and H. Shinkai
The 13th Marcel Grossmann Meeting, [Stockholm, Sweden, July 2012]

46. Wormhole dynamics in Gauss-Bonnet gravity (poster)
H. Shinkai and T. Torii
RESCEU Symposium on General Relativity and Gravitation (JGRG22), [Tokyo U., Japan, November 2012]

47. Wormhole evolutions in higher-dimensional gravity –Effects of Gauss-Bonnet gravity terms (poster)
H. Shinkai and T. Torii
The 20th International Conference on General Relativity and Gravitation (GR20), [Warsaw, Poland, July 2013]

48. Gravitational collapse of ring objects in five-dimensional space-time (poster)
Y. Yamada and H. Shinkai
The 23th Workshop on General Relativity and Gravitation (JGRG23), [Hirosaki U., Japan, November 2013]

49. Wormhole dynamics in Gauss-Bonnet gravity (poster)
H. Shinkai and T. Torii
The 23th Workshop on General Relativity and Gravitation (JGRG23), [Hirosaki U., Japan, November 2013]

50. Wormhole dynamics
H. Shinkai and T. Torii
International Conference on Mathematical Modeling in Physical Sciences [Madrid, Spain, August 2014]. conference paper J. Phys.: Conf. Ser. 574 (2015) 012056.

51. Wormhole dynamics in higher-dimensional space-time
H. Shinkai and T. Torii
Spanish Relativity Meeting 2014 [Valencia, Spain, September 2014]. conference paper J. Phys.: Conf. Ser. 600 (2015) 012038.

52. Wormhole dynamics in higher-dimensional space-time (poster)
H. Shinkai and T. Torii
JGRG24: The 24rd Workshop on General Relativity and Gravitation in Japan [IMPU, Tokyo Univ., November 2014]

53. Dynamics in n-dimensional Gauss-Bonnet gravity: I. Colliding Scalar Waves, II. Wormhole evolutions (poster)
H. Shinkai and T. Torii
General Relativity and Gravitation: A Centennial Perspective [Penn State, USA, June 2015]

54. Can we distinguish formation models of a super-massive black-hole? (poster)
H. Shinkai, T. Ebisuzaki, and N. Kanda
Gravitational Wave Physics and Astronomy Workshop (GWPAW) 2015 [Osaka, Japan, June 2015]

55. Singularity formation in n-dimensional Gauss-Bonnet gravity (poster)
H. Shinkai and T. Torii
JGRG25: The 25th Workshop on General Relativity and Gravitation in Japan [YITP, Kyoto Univ., December 2015]

56. Formation Scenario of SMBH and Gravitational Wave
H. Shinkai, N. Kanda and T. Ebisuzaki
The First International Meeting on KAGRA [KAIST, Daejeon, Korea, June 2016]

57. Gravitational waves from merging intermediate-mass black-holes (poster)
H. Shinkai, N. Kanda and T. Ebisuzaki

JGRG26: The 26th Workshop on General Relativity and Gravitation in Japan [Osaka City Univ., October 2016]

58. Singularity Avoidance of Gauss-Bonnet gravity (poster)
T. Torii and H. Shinkai
JGRG26: The 26th Workshop on General Relativity and Gravitation in Japan [Osaka City Univ., October 2016]

59. Event Rates of Gravitational Waves from merging Intermediate mass Black Holes: based on a Runaway Path to a SMBH
H. Shinkai and T. Ebisuzaki
The 13th International Conference on Gravitation, Astrophysics, and Cosmology (ICGAC-XIII) [Seoul, Korea, July 2017]
EPJ Web of Conferences 168, 05002 (2018)

60. Colliding scalar pulses in the Einstein-Gauss-Bonnet gravity
H. Shinkai and T. Torii
The 13th International Conference on Gravitation, Astrophysics, and Cosmology (ICGAC-XIII) [Seoul, Korea, July 2017]
EPJ Web of Conferences 168, 04014 (2018)

61. Event rates of gravitational waves in space-borne detectors based on a hierarchical growth model of SMBHs (poster)
H. Shinkai and T. Ebisuzaki
JGRG27: The 27th Workshop on General Relativity and Gravitation in Japan [Hiroshima, November 2017]

62. Gravitational-wave data analysis using Auto-Regressive model (poster)
S. Yamamoto and H. Shinkai
JGRG27: The 27th Workshop on General Relativity and Gravitation in Japan [Hiroshima, November 2017]

63. Intermediate-mass black holes as sources of gravitational waves (poster)
H. Shinkai
International Symposium on Cosmology and Particle Astrophysics (CosPA 2017) [Kyoto Univ., December 2017]

64. Autoregressive Approach to Extract Ring-down Gravitational Wave of Black-hole Merger (poster)
H. Shinkai
The 4th KAGRA International Workshop, [Seoul, Korea, June 2018]

65. Nonlinear Dynamics in the Einstein-Gauss-Bonnet gravity
H. Shinkai and T. Torii
MG15: Fifteenth Marcel Grossmann Meeting [Rome, Italy, July 2018]

66. Autoregressive Approach to Extract Ring-down Gravitational Wave of Black-hole Merger
H. Shinkai
MG15: Fifteenth Marcel Grossmann Meeting [Rome, Italy, July 2018]

67. Gravitational-wave detector using optical lattice clocks in space
H. Shinkai with T. Ebisuzaki, H. Katori, J. Makino, T. Tamagawa and A.Noda
MG15: Fifteenth Marcel Grossmann Meeting [Rome, Italy, July 2018]

68. INO: Interplanetary Network of Optical Lattice Clocks (poster)
H. Shinkai
JGRG28: The 28th Workshop on General Relativity and Gravitation in Japan [Rikkyo U., November 2018]

69. Comparison of various methods to extract ringdown frequency from gravitational wave data (poster)

H. Shinkai, with H. Nakano , T. Narikawa, K. Oohara, K. Sakai, H. Takahashi, T. Tanaka, N. Uchikata, S. Yamamoto, T. S. Yamamoto
GR22 & Amaldi13: 22nd International Conference on General Relativity and Gravitation & 13th Edoardo Amaldi Conference on Gravitational Waves, [Valencia, Spain, July 2019]

70. Ring-down GW wave search using Auto-Regressive model (poster)
H. Shinkai
YITP long-term workshop "Multi-Messenger Astrophysics in the Gravitational Wave Era" [YITP, Kyoto U, October 2019]

71. Ring-down waveform extraction by Auto-Regressive approach (poster)
H. Shinkai
Gravitational Wave Physics and Astronomy Workshop [RESCEU, U. Tokyo, October 2019]

72. Auto-regressive approach to find ring-down gravitational wave (poster)
H. Shinkai
JGRG29: The 29th Workshop on General Relativity and Gravitation in Japan [Kobe U., November 2019]

Presentations at Domestic Workshops

1. Gravitational waves in a planar universe with cosmological constant
H. Shinkai and K. Maeda
The Workshop on General Relativity and Gravitation, [Tokyo Metropolitan University. December 1991]

2. Colliding plane gravitational waves (in Japanese)
H. Shinkai and K. Maeda
The 2nd Gravitational Wave Symposium, [Atami, Dec. 1991]

3. Finding principal null directions for numerical relativists
H. Shinkai, L. Gunnersen and K. Maeda
The 3rd Workshop on General Relativity and Gravitation, [Tokyo University, January 1994]

4. Numerical relativity using Ashtekar's variables
H. Shinkai and G. Yoneda
The 4th Workshop on General Relativity and Gravitation, [Kyoto University, November 1994]

5. Numerical study of topological inflationary scenario
N. Sakai, H. Shinkai, T. Tachizawa and K. Maeda
The 4th Workshop on General Relativity and Gravitation, [Kyoto University, November 1994]

6. Gravitational Faraday effect in colliding plane waves (in Japanese)
H. Shinkai
The 7th Rironkon Simposium, [Tokyo National Observatory, December 1994]

7. Dynamics in the Ashtekar gravity
H. Shinkai, G. Yoneda and A. Nakamichi
The 5th Workshop on General Relativity and Gravitation, [Nagoya University, January 1996] (Proceedings, p.121-130)

8. A trick for passing degenerate points in the Ashtekar formulation
A. Nakamichi, G. Yoneda and H. Shinkai
The 6th Workshop on General Relativity and Gravitation, [Tokyo Institute of Technology, December 1996] (Proceedings, p.430-437)

9. Towards a numerical evolution using post-Newtonian initial data
H. Shinkai
The 2nd Neutron Star Grand Challenge Meeting, [Washington University, May 1997] (Proceedings, 9 pages)

10. Boson Stars in Scalar-Tensor theories
H. Shinkai, G.L. Comer and J. Balakrishna
The 7th Midwest Relativity Conference, [Washington University, November 1997] (Proceedings, p.28-32)

11. Constructing hyperbolic systems in the Ashtekar formulation
G. Yoneda and H. Shinkai
The 8th Workshop on General Relativity and Gravitation, [Niigata University, October 1998]

12. Symmetric hyperbolic and asymptotically constrained system based on Ashtekar's variable
G. Yoneda and H. Shinkai
The 9th Workshop on General Relativity and Gravitation, [Hiroshima University, November 1999] (Proceedings, p342-349)

13. Hyperbolic formulations of Ashtekar's new connection formulations and these numerical experiments
H. Shinkai and G. Yoneda
The 4th Eastern Gravity meeting, [Duquesne University, Pittsburgh, April 2000]

14. Asymptotically constrained systems for Numerical Relativity
H. Shinkai
The 14th Rironkon Simposium, [Osaka, December 2001] (Proceedings p.93))

15. Stability of Wormholes
H. Shinkai
Workshop on Spacetime singularity and its around, [Osaka, January 2002]

16. Numerical Relativity: Formulation Problems
H. Shinkai
Workshop on Gravitational Wave Researches, [Kyoto, February 2002]

17. Numerical Experiments of Adjusted Einstein equations
H. Shinkai
The 15th Rironkon Simposium, [NAOJ, Tokyo, December 2002] (Proceedings to be published)

18. Cactus as a Problem Solving Emvironment
H. Shinkai (invited talk)
Grid-Computing Workshop, [Fujitsu, Tokyo, January 2003]

19. Numerical experiments of the adjusted Einstein equations
H. Shinkai
Gravitational Waves and its around, [YITP, January 2003]

20. Gravitational waves from merging intermediate-mass black holes
H. Shinkai, T. Matsubayashi, and T. Ebisuzaki
The 2nd DECIGO workshop, [NAO, May 2003]

21. Constraint propagation revisited
H. Shinkai and G. Yoneda
The 19th Rironkon Symposium [Rikkyo Univ., December 2006]

22. Numerical solutions in 5-dimensional momentarily static spacetime
Y. Yamada and H. Shinkai
The 10th Spacetime Singularity Workshop [KEK, January 2009]

23. Numerical investigation of black objects
Y. Yamada and H. Shinkai
The 3rd workshop on Higher-dimensional Black-holes [Kyoto, December 2009]

24. Black ring and hoop conjecture
Y. Yamada and H. Shinkai
The 24th Rironkon Symposium [NAOJ, November 2011]

25. Gravitational collapse in five-dimensional space-time
Y. Yamada and H. Shinkai
The 2nd AICS International Symposium, [RIKEN, Kobe, March 2012]

26. Wormholes in higher-dimensional gravity: Effects of Gauss-Bonnet gravity
H. Shinkai and T. Torii
The 26th Rironkon Symposium [Tokyo Univ., December 2013]

27. Introduction to Sparse Modeling
H. Shinkai
Innovative Area Research 'Gravitational wave physics and astronomy: Genesis' [Shiga, Jan. 2020]

28. (invited talk) Gravitational Wave Observation: Current and Future
Symposium of Fugaku Supercomputing in Particle Physics, Nuclear Physics, and Universe, [online, Jan. 2021]

Presentations at the Official Society Meetings

1. Dynamical evolution of inhomogeneous planar universe
H. Shinkai and K. Maeda
The 41th Japan Physical Society Meeting, [Keio University, March 1992]

2. Gravitational waves in the expanding universe with cosmological constant
H. Shinkai and K. Maeda
The 1992 Japan Astronomical Society Spring Meeting, [Osaka, May 1993]

3. Gravitational waves in the expanding universe with cosmological constant
H. Shinkai and K. Maeda
The 42th Japan Physical Society Meeting, [Niigata University, October 1993]

4. Cosmic no hair conjecture in a planar universe
H. Shinkai and K. Maeda
The 43th Japan Physical Society Meeting, [Tohoku, March 1993]

5. Generality of inflation in a planar universe
H. Shinkai and K. Maeda
The 1993 Japan Astronomical Society Spring Meeting, [Sagamihara, May 1993]

6. Principal null directions for numerical relativists
H. Shinkai, L. Gunnarsen and K. Maeda
The 1993 Japan Astronomical Society Fall Meeting, [Kagoshima University, October 1993]

7. Inhomogeneous scalar field initial data in the spherically symmetric spacetime
H. Shinkai, T. Chiba, K. Nakao and T. Nakamura
The 45th Japan Physical Society Meeting, [Kyushu Kougyou University, March 1994]

8. Numerical studies of topological inflationary scenario
H. Shinkai, N. Sakai, T. Tachizawa and K. Maeda
The 46th Japan Physical Society Meeting, [Yamagata University, October 1994]

9. Gravitational Faraday effects in colliding gravitational waves
H. Shinkai
The 1995 Japan Astronomical Society Spring Meeting, [Gakugei University, March 1995]

10. On connection approach to numerical relativity
G. Yoneda and H. Shinkai
The 47th Japan Physical Society Meeting, [Kanagawa University, March 1995]

11. Reality conditions and constraints in the Ashtekar formulation
H. Shinkai and G. Yoneda
The 48th Japan Physical Society Meeting, [Nagoya University, October 1995]

12. Can we pass degenerate points in the Ashtekar formulation?
A. Nakamichi, H. Shinkai and G. Yoneda
The 49th Japan Physical Society Meeting, [Kanazawa University, April 1996]

13. Numerical relativity with help of Ashtekar's variables
H. Shinkai and G. Yoneda
The 49th Japan Physical Society Meeting, [Kanazawa University, April 1996]

14. Lorenzian dynamics in Ashtekar gravity
H. Shinkai and G. Yoneda
The 50th Japan Physical Society Meeting, [Saga University, October 1996]

15. Boson stars in scalar-tensor theories
H. Shinkai, G.L. Comer and J. Balakrishna
The 53th Japan Physical Society Meeting, [Nihon University, March 1998]

16. Constructing hyperbolic systems in the Ashtekar formulation of general relativity
H. Shinkai and G. Yoneda
The American Physical Society Meeting, [Atlanta, March 1999]

17. Post-Newtonian Initial Data Formulation for the Neutron Star Grand Challenge Project
H. Shinkai, M. Miller, W-M. Suen, M. Tobias, C. M. Will
The American Physical Society Meeting, [Atlanta, March 1999]

18. Hyperbolic systems of general relativity in the Ashtekar formulation
G. Yoneda and H. Shinkai
The 54th Japan Physical Society Meeting, [Shimane University, September 1999]

19. Constraint propagation of the Einstein equations
G. Yoneda and H. Shinkai
The 56th Japan Physical Society Meeting, [Chuo University, March 2001]

20. Quasi-spherical approach for numerical relativity
H. Shinkai and S.A. Hayward
The 56th Japan Physical Society Meeting, [Chuo University, March 2001]

21. Formulation of Einstein equations for stable numerical simulations
H. Shinkai and G. Yoneda
The 2002 Spring Japan Physical Society Meeting, [Ritsumeikan University, March 2002]

22. Formulation of Einstein equations for stable numerical simulations: II
G. Yoneda and H. Shinkai
The 2002 Fall Japan Physical Society Meeting, [Rikkyo University, September 2002]

23. Fate of the traversible wormholes
H. Shinkai and S.A. Hayward
The 2002 Fall Japan Physical Society Meeting, [Rikkyo University, September 2002]

24. Formulation of Einstein equations for stable numerical simulations: III
H. Shinkai and G. Yoneda
The 2003 Spring Japan Physical Society Meeting, [Tohoku-Gakuin University, March 2003]

25. Stable numerical simulations via adjusted ADM systems
H. Shinkai and G. Yoneda
The 2007 Spring Japan Physical Society Meeting, [Tokyo Metropolitan Univ., Mar. 2007]

26. Stable numerical simulations via adjusted BSSN systems
K. Kiuchi and H. Shinkai
The 2007 Fall Japan Physical Society Meeting, [Hokkaido Univ., Sep. 2007]

27. Black-hole formation and hoop conjecture in 5-dimensional space-time
Y. Yamada and H. Shinkai
The 2009 Fall Japan Physical Society Meeting, [Konan Univ., Sep. 2009]

28. Numerical analysis of black-ring in 5-dimensional space-time
Y. Yamada and H. Shinkai
The 2010 Spring Japan Physical Society Meeting, [Okayama Univ., Mar. 2010]

29. Constraint propagation of C^2-adjusted BSSN Equations
T. Tsuchiya, G. Yoneda and H. Shinkai
The 2010 Fall Meeting of Japan Society for Industrial and Applied Mathematics, [Meiji Univ., Sep. 2010]

30. Numerical analysis of black-ring in 5-dimensional space-time (II)
Y. Yamada and H. Shinkai
The 2010 Fall Japan Physical Society Meeting, [Kyushu Inst. Tech., Sep. 2010]

31. Gravitational collapses and naked singularity in 5-dimensional space-time
Y. Yamada and H. Shinkai
The 2011 Spring Japan Physical Society Meeting, [–cencelled–, Mar. 2011]

32. Black ring and hoop conjecture
Y. Yamada and H. Shinkai
The 2011 Fall Japan Physical Society Meeting, [Hirosaki U., Sep. 2011]

33. Five-dimensional gravitational collapses: effects of angular momentum
Y. Yamada and H. Shinkai
The 2012 Spring Japan Physical Society Meeting, [Kwansei U., Mar. 2012]

34. Wormhole dynamics in Gauss-Bonnet gravity
H. Shinkai and T. Torii
The 2013 Spring Japan Physical Society Meeting, [Hiroshima U., Mar. 2013]

35. Instability of wormholes
H. Shinkai and T. Torii
The 2015 Spring Japan Astronomical Society Meeting, [ICU, Mar. 2014]

36. Stability of Wormholes in higher-dimensional spacetime
T. Torii and H. Shinkai
The 2014 Spring Japan Physical Society Meeting, [Tokai U., Mar. 2014]

37. Topological wormholes and their stability
T. Torii and H. Shinkai
The 2015 Spring Japan Physical Society Meeting, [Waseda U., Mar. 2015]

38. Dynamics in n-dimensional Gauss-Bonnet gravity
H. Shinkai and T. Torii
The 2015 Spring Japan Physical Society Meeting, [Waseda U., Mar. 2015]

39. Dynamics in n-dimensional Gauss-Bonnet gravity II
H. Shinkai and T. Torii
The 2016 Spring Japan Physical Society Meeting, [Tohoku Gakuin U., Mar. 2016]

40. Possibility for judging formation scenario of super-massive black holes using gravitational waves
H. Shinkai, N. Kanda and T. Ebisuzaki
The 2016 Fall Japan Astronomical Society Meeting, [Ehime U., Mar. 2016]

41. Intermediate-Mass Black Holes and Gravitational Wave Observation
H. Shinkai, and T. Ebisuzaki
The 2017 Fall Japan Physical Society Meeting, [Utsunomiya U., Sep. 2017]

42. New method of Gravitational Wave Observation using Optical Lattice Clocks
H. Shinkai, T. Tamagawa, A. Noda, T. Katori, J. Makino, and T. Ebisuzaki
The 2018 Spring Japan Physical Society Meeting, [Tokyo Science U., Mar. 2018]

43. Calculus Solver with solution-style outputs
M. Otsuka, H. Taira, and H. Shinkai
Artificial Intelligence Society Meeting, [Kumamoto, June 2018]

44. Gravitational Wave Data Analysis using Auto-Regressive method: Extraction of Ring-down Waves after Mergers of Black Holes
H. Shinkai, and S. Yamamoto, The 2018 Fall Japan Physical Society Meeting, [Shinshu U., Sep. 2018]

45. Merger model of Black Holes at the Center of the Galaxies and Gravitational Wave Observation
H. Shinkai, The 2018 Fall meeting of Astronomical Society of Japan, [U. Himeji Pref., Sep. 2018]

46. Gravitational Wave Data Analysis using Auto-Regressive method (2) : Analysis of LIGO/Virgo Catalogue O2
H. Shinkai, and S. Yamamoto, The 2019 Fall Japan Physical Society Meeting, [Yamagata U., Sep. 2019]

Refereed Articles in Japanese

1. Numerical Study of Cosmic No Hair Conjecture
H. Shinkai, T. Tsukamoto and K. Maeda
Bulletin of the Centre for Informatics, Waseda University, Vol.17, p.1-12 (1994)

2. Can We Determine the Theory of Gravity by Observing Gravitational Waves?
M. Saijo, H. Shinkai and K. Maeda
Bulletin of the Centre for Informatics, Waseda University, Vol.21, p.21-34 (1997)

3. Culture and History via Ancient Star Charts – Software for comparison of 28 constellations written in Takamatsuzuka Tomb with Present chart –
Hideaki Kawazu and H. Shinkai
in *Tenmon-Kyouiku*, May 2008 issue (Bulletin of the Society for Teaching and Popularization of Astronomy).

4. Difficulty Levels of *SUDOKU* – Proposals of *D*-Score based on Solving Logics –
T. Dode and H. Shinkai
Memoirs of Osaka Institute of Technology, A56, p.1-18 (2011)

5. Goryu Asada and Kepler's third law of planetary motion
H. Shinkai
Memoirs of Osaka Institute of Technology, 61, p.27-36 (2016)

6. Gravitational Wave and Data Analysis (review)
H. Shinkai
Systems, Control and Information Engineers, 62, No. 9, p. 370-375 (2018)

7. Nobel Prize in Physics 2020
H. Shinkai
in *Tenmon-Kyouiku*, November 2020 issue (Bulletin of the Society for Teaching and Popularization of Astronomy).

8. Transcription of "Kokkei Kyuri Heso-no Saikoku
H. Shinkai
submitted to Memoirs of Osaka Institute of Technology

Textbooks

1. Calculus with Applications: A Structured Approach [Tettei-Kouryaku Bibun-Sekibun] (in Japanese, 244 pages)
   H. Shinkai
   Kyoritsu Shuppan Inc. (2009, April) ISBN 978-4-320-01879-2

2. Ordinary Differential Equations with Applications: A Structured Approach [Tettei-Kouryaku Jou-Bibun-Houteishiki] (in Japanese, 248 pages)
   H. Shinkai
   Kyoritsu Shuppan Inc. (2010, August) ISBN 978-4-320-01936-2

3. Probability and Statistics with Applications: A Structured Approach [Tettei-Kouryaku Kakuritsu-Toukei] (in Japanese, 280 pages)
   H. Shinkai
   Kyoritsu Shuppan Inc. (2012, March) ISBN 978-4-320-11009-0

4. Calculus with Applications: A Structured Approach, Second ed. [Tettei-Kouryaku Bibun-Sekibun Kaitei-ban] (in Japanese, 256 pages)
   H. Shinkai
   Kyoritsu Shuppan Inc. (2013, December) ISBN 978-4-320-11060-1

5. Physics answers to "why?" in your daily life [Naze ni kotaeru Butsurigaku] (in Japanese, 272 pages)
   H. Shinkai
   Morikita Shuppan Inc. (2015, October) ISBN 978-4-627-15611-1

6. Frontiers of Physics: Relativity, Quantum Theory, and Cosmology [Gendai Butsurigaku ga egaku Uchuuron] (in Japanese, 231 pages)
   H. Shinkai
   Kyoritsu Shuppan Inc. (2018, September) ISBN 978-4-320-03605-5

Popular books

1. Timemachine and Science of Space-time [Taimu-Mashin to Jikuu no Kagaku] (in Japanese, 240 pages)
   H. Shinkai
   Natsume Shuppan Inc. (2011, February) ISBN 978-4-816-35025-2

2. Black-hole, Expanding Universe, and Gravitational Wave (in Japanese, 344 pages)
   H. Shinkai
   Kobunsha Inc. (2015, September) ISBN 978-4-334-03877-9

Translations

1. Life in the Universe, lectures by S.W.Hawking,
   Co-translation for a book "Uchuu ni okeru seimei"
   ed. by Katsuhiko Sato, (NTT Publ., 1993)

2. Numerical Relativity and Black Holes
   by P.Anninos, J.Masso, E.Seidel and W-M.Suen (Physics World, 1996 July, p43)
   translation for *Parity*, in June 1997 issue (Maruzen Co., 1997)

3. How to build a Universe
   by Ben Gilliland
   Co-translation with Takashi Torii, Japanese title: "Uchuu no tsukuri kata" (Maruzen Publ., 2016) ISBN:978-4-621-30050-3

4. Problem Book in Relativity and Gravitation
   by A. P. Lightman, W. H. Press, R. H. Price, and S. A. Teukolsky
   Co-translation with Takashi Torii, (Morikita Publ., 2019)

Articles in Japanese Popular Magazines

1. Mass and Energy in Relativity
   in *Suuri-Kagaku*, Dec 2003 issue (Saiensu Co., Tokyo).
2. Wormholes: Recent Researches
   in *Parity*, May 2003 issue (Maruzen Co., Tokyo).
3. Tensor calculus softwares
   in *Suuri-Kagaku*, July 2015 issue (Saiensu Co., Tokyo).
4. Gravitational-wave detection using optical lattice clocks
   in *Kagaku*, December 2017 issue (Iwanami Co., Tokyo).
5. Blackhole and Gravitational Wave
   in *Suuri-Kagaku*, December 2018 issue (Saiensu Co., Tokyo).
6. Blackhole theories and their around
   in *Gendai-Shisou*, August 2019 issue (Seido Co., Tokyo).
7. Nobel Prize in Physics 2020
   in *Ronza*, 2020 October (Asahi Shinbun)

Book Reviews

1. Textbooks for Physics Beginners (2) : Guidance by using computers,
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External Links

ORCID	`https://orcid.org/0000-0003-1082-2844`
ResearcherID	`http://www.researcherid.com/rid/S-6590-2016`
Scopus	`https://www.scopus.com/authid/detail.uri?authorId=7103415263`
Google Scholar	`https://scholar.google.co.jp/citations?user=zxwrmYQAAAAJ`
SPIRES	`http://inspirehep.net/search?ln=ja&p=find+a+shinkai\%2C+h`
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CiNii	`http://ci.nii.ac.jp/openurl/query?rft.au=`真貝寿明
Publons	`https://publons.com/author/1293012/hisa-aki-shinkai#stats`

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