

Papers

43. Tetsuya Hara and Anna Suzuki, On the Possible Evolutionary History of the Water Ocean on Venus Submitted to Prog. Theor. Exp. Phys., ArXiv:2009.04040, astroph.Ep.(2020)
42. Ariyoshi Kunitomo, Akika Nakamichi and Tetsuya Hara, Coupled macro spin model with two variables for polarity reversals in the Earth and the Sun Submitted to Prog. Theor. Exp. Phys., arXiv:2006.15902; astroph.Ep.(2020).
41. Tetsuya Hara, Anna Suzuki, Shogo Saka, and Takuma Tanigawa, Constraints for the thawing and freezing potentials Prog. Theor. Exp. Phys., **2018**, 013E02, January 2018, <https://doi.org/10.1093/ptep/ptx160>.
40. T. Hara, *Quest for Potentials in Quintessence Scenario*, Journal of Applied Mathematics and Physics, **2016**, 4, 211-214. <http://dx.doi.org/10.4236/jamp.2016.42027>[arXiv:astro-ph.CO/1605.02180]
39. Yusuke Muromachi, Akira Okabayashi, Daiki Okada, T. Hara, and Yutaka Itoh, *Search for dark energy potentials in quintessence theory*, Prog. Theor. Exp. Phys., **2015**, 093E01, [arXiv:astro-ph.CO/1503.03678].
38. T. Hara, Ryohei Sakata, Yusuke Muromachi, and Yutaka Itoh, *Time variation of the equation of state for dark energy*, Prog. Theor. Exp. Phys., **2014**, 113E01, [arXiv:astro-ph.CO/1409.2726].
- 37 T. Hara, Takanori Wago, Youhei Yuhi, and Daigo Kajiura, *On the Entropy of a Self-Gravitating System*, Acta Humanistica et Scientifica Universitatis Sangyo Kyotiensis (natural Science Series), **41** (2012), 19.
- 36 T. Hara, Kazuma Takagi, and Daigo Kajiura, *Transfer of Life-Bearing Meteorites from Earth to Other Planets* Journal of Cosmology, **7**, (2010), 1731, [arXiv:astro-ph.EP/1204.1719].
- 35 Daigo Kajiura and T. Hara, *Continuation of the Entropy Variation in the Process from an 'Ordinary' Particle to the Black Hole*, Acta Humanistica et Scientifica Universitatis Sangyo Kyotiensis (natural Science Series), **37** (2008), 11.
- 34 Daigo Kajiura, Keita Sakai, and T. Hara, *On a Nonminimal Coupling of a Scalar and Vector Fields to Gravity*, Acta Humanistica et Scientifica Universitatis Sangyo Kyotiensis (natural Science Series), **34** (2005), 230.
- 33 Keita Sakai, Daigo Kajiura, and T. Hara, *On the Entropy of a Black Hole, Space-Time with Lambda term and Uniformly Accelerated System*, Acta Humanistica et Scientifica Universitatis

Sangyo Kyotiensis (natural Science Series), **34** (2005), 126.

32. Hidetomo Yamazaki and T. Hara, *Dirac Decomposition of Wheeler-DeWitt Equation in the Bianchi Class A Models*, Prog. Theor. Phys., **106** (2001), 323.
31. Toru Hirayama and T. Hara, *A Calculation on the Self-Field of a Point Charge and the Unruh Effect*, Prog. Theor. Phys., **103** (2000), 907.
30. Toru Hirayama, and T. Hara, *Remains of Quantum Stress Tensor of Vacuum Left in Classical Radiation*, Acta Humanistica et Scientifica Universitatis Sangyo Kyotiensis (natural Science Series), **28** (1998), 58.
29. T.Hara, P. Mähönen, S. Miyoshi, *Hierarchical Structure of Astronomical Objects in the Cosmic String Scheme*, Prog. Theor. Phys. **102** (1999), 51
28. Hidetomo Yamazaki, T. Hara, and Ikuo Sogami, *Dirac Decomposition of Evolution Equation of the Quantized Mixmaster Universe*, Acta Humanistica et Scientifica Universitatis Sangyo Kyotiensis (natural Science Series), **27** (1998), 58.
- 27 P. Mähönen, T.Hara, Toivo Voll, S. Miyoshi, *Statistics of Cosmic Microwave Background Radiation with the Cosmic String Model* Int. J. M. Phys. D, **D6** (1997), 535.
26. T. Hara, Hideki Yamamoto, Petri Mähönen, and S. Miyoshi, *A simple black hole model of quasar abundance and evolution in the infinitely long cosmic-string scheme* , Astrophys. J., **462** (1996), 601.
25. T. Hara, Hideki Yamamoto, Petri Mähönen, and S. Miyoshi, *Formation of the first objects and galaxies in the long cosmic string scheme*, Astrophys. J., **461** (1996), 1.
24. Petri Mähönen, T. Hara, S. Miyoshi, *Quasar constraints on the cosmic string models*, Astrophys. J., **454** (1995), L81.
23. T. Hara, Petri Mähönen, Hideki Yamamoto, and S. Miyoshi, *Inhomogeneity of cold dark matter due to initial fluctuations in the long cosmic string scheme*, Astrophys. J., **438** (1995), 27.
22. T. Hara, Petri Mähönen, S. Miyoshi, *Clusters of galaxies in the long cosmic string model*, Astrophys. J., **432** (1994), 31.
21. T. Hara, Hideki Yamamoto, Petri Mähönen, S. Miyoshi, *Dark matter around a cluster of galaxies under the long cosmic string scheme*, Astrophys. J., **428** (1994), 51.
20. T. Hara, Petri Mähönen, S. Miyoshi, *Large-scale Peculiar velocity field due to infinitely long cosmic strings*, Astrophys. J., **415** (1993), 445.

19. T. Hara, Petri Mähönen, S. Miyoshi, *Effects of Long Cosmic Strings on the Anisotropies of the Cosmic Background Radiation*, *Astrophys. J.*, **414** (1993), 421.
18. T. Hara, Petri Mähönen, S. Miyoshi, *On the inhomogeneity of dark matter and luminous objects induced by infinitely long cosmic string*, *Astrophys. J.*, **412** (1993), 22.
17. T. Hara, S. Miyoshi, Petri Mähönen, *Anisotropies of cosmic background radiation due to long cosmic strings*, *Phys. Rev.*, **D47** (1993), 2297.
16. T. Hara, S. Miyoshi, *Comparison of three orthogonally crossed wakes with the CfA large-scale structure*, *Astrophys. J.*, **405** (1993), 419.
15. T. Hara, Shoji Morioka, and S. Miyoshi, *Large-Scale Structures Due to Wakes of Open Cosmic Strings*, *Prog. Theor. Phys.*, **84** (1990), 867.
14. T. Hara, S. Miyoshi, *Decrease of Velocity Differences between Baryonic Objects and Cold Dark Matter*, *Prog. Theor. Phys.*, **83** (1990), 660.
13. T. Hara, S. Miyoshi, *Large-Scale Structures and Streaming Velocities Due to Open Cosmic Strings*, *Prog. Theor. Phys.*, **81** (1989), 1187.
12. T. Hara, S. Miyoshi, *Flare-Up of the Universe after $z \leq 10^2$ for Cosmic String Model*, *Prog. Theor. Phys.*, **78** (1987), 1081.
11. T. Hara, Sigeru Miyoshi, *Formation of the First Systems in the Wakes of Moving Cosmic Strings*, *Prog. Theor. Phys.*, **77** (1987), 1152.
10. T. Hara, *Variation of 3K Background Radiation Due to Cosmic Strings*, *Prog. Theor. Phys.*, **75** (1986), 836.
9. T. Hara, *Super-Weakly Interacting Particles and the Formation of Galaxies and Clusters of Galaxies*, *Prog. Theor. Phys.*, **70** (1983), 1556.
8. T. Hara, H. sato, *Elastic and Inelastic Scattering of the Relic Neutrinos by High Energy Cosmic Rays*, *Prog. Theor. Phys.*, **65** (1981), 478.
- 7 T. Hara and Humitaka Sato, *Scattering of the Cosmic Neutrinos by High Energy Cosmic Rays*, *Prog. Theor. Phys.*, **64**(1980), 1089.
6. T. Hara, and Humitaka Sato, *Energy Spectra of High Energy Neutrinos and Cosmic Rays from Pulsars*, *Prog. Theor. Phys.*, **62** (1979), 969.
5. T. Hara, *Evolution of a Super-Massive Star in a Dense Stellar System*, *Prog. Theor. Phys.*, **60** (1978), 711.

4. T. Hara, Satoru Ikeuchi, and Daiichiro Sugimoto, *Thermal Properties of Self-Gravitating Plane-Symmetric Configuration*, Prog. Theor. Phys., **56** (1976), 818.
3. T. Hara and Satoru Ikeuchi, *Formation and Evolution of a High-Density Gaseous Disk in a Dense Stellar System*, Prog. Theor. Phys., **56** (1976), 531.
2. T. Hara, *Energy Extraction in the Weyl Space-Time: Maximum Binding Energy and Gravitational Energy Radiated by a Falling Particle*, Prog. Theor. Phys., **51** (1974), 1750.
1. T. Hara, Takuya Matsuda, and Kiyoshi Nakazawa, *Dynamical Contraction of Rotating Gaseous Spheroids*, Prog. Theor. Phys., **49** (1973), 460.

(ArXiv)

1. T. Hara, Keita Sakai, Daigo Kajiura, *On the Entropy Increase in the Black Hole Formation*, [arXiv:gr-qc/0503105]
2. T. Hara, Keita Sakai, Daigo Kajiura, *Adopting the Uncertainty Principle for the Entropy Estimation of Black Holes, de Sitter Space and Rindler Space*, [arXiv:gr-qc/0608067].
3. T. Hara, Shuhei Kunitomo, Masanobu Shigeyasu, Daigo Kajiura, *On the Formation Age of the First Planetary System*, Proceedings IAU Symposium No. 249, 2007, Exoplanets: ed. by Y-S. Sun, S. Ferraz-Mello and J.-L, Zhou, 325, [DOI:10.1017/S1743921308016785], arXiv:1204.0596 [astro-ph.EP]
4. T. Hara, *Thawing model seems to be preferable for dark energy potential in the quintessence scenario*, submitted to the Journal of Universe as the proceedings of VARCOSMOFUN'16 (at Poland).

(Proceedings et al.)

1. T. Hara, *Variation of 3K Background Radiation Due to Cosmic Strings*, Proceedings of "Phase transition in the Universe and Formation of the Hierarchical Structures" (Tokyo Univ. 1985), 113.
2. T. Hara, and S. Miyoshi, *Formation of Population III Objects due to Cosmic Strings*, Proceedings of IAU Symposium No.126 "Globular Cluster Systems in Galaxies", (Aug. 25-29, 1986, Cambridge Univ.), 701
3. T. Hara, and S. Miyoshi, *On the Large-Scale Streaming Velocities by Open Cosmic Strings*, Proceedings of the Yamada Conference XX, ed. S. Hayakawa and K. Sato (March 28 - April 1, 1988), 185.
4. T. Hara, and S. Miyoshi, *Dragging Force on Galaxies due to Streaming Dark Matter*,

Proceedings of IAU Colloquim No.124, "Paired and Interacting Galaxies" (4-7 Dec, 1989, Atlanta(Alabama)), 645.

5. T. Hara, Shoji Morioka, and S. Miyoshi, *On the Large-Scale Structure Formed by Wakes of Open Cosmic Strings*, Proceedings of IAU Colloquim No.124, "Paired and Interacting Galaxies" (4-7 Dec, 1989, Atlanta(Alabama)), 677.
6. T. Hara, Shoji Morioka, and S. Miyoshi, *Thermal History of the Intergalactic Medium Due to Open Cosmic String Scenario*, Proceedings of the 21st International Cosmic Ray Conference. **1** (OG Sessions), 24.
7. T. Hara, S. Miyoshi, *Fragmentation and Clustering in the Wake formed by Cosmic String* Proceedings of the Int. Conf. "Primordial Nucleosynthesis and Evolution of Early Universe" (Sep. 4-8, 1990, Tokyo), 577.
8. T. Hara, Shoji Morioka, and S. Miyoshi, *Formation of Large-scale Structure in the Wake of Open Cosmic String*, Second "Rencontres de Blois" , "25-th Anniversary of the Cosmic Background Radiation Discovery", "Physical Cosmology" ed. By Blanchard et al., (Chateau de Blois, Aug. 28 - Sept. 1, 1990), 445.
9. T. Hara, and S. Miyoshi, *Fragmentation and Clustering in the Wake formed by Cosmic String*, Second "Rencontres de Blois" , "25-th Anniversary of the Cosmic Background Radiation Discovery", "Physical Cosmology" ed. By Blanchard et al., (Chateau de Blois, Aug. 28 - Sept. 1, 1990), 447.
10. T. Hara, and S. Miyoshi, *Fragmentation and Clustering in the Wake formed by Cosmic String, Primordial Nucleosynthesis and Evolution of Early Universe*, ed. by K. Sato and J. Audouze, (Sept. 4-8, 1990, Tokyo), *Astrophys. Space Sci. Lib.* **169**, 577.
11. T. Hara, and S. Miyoshi, *Formation of large-scale structure by open cosmic string and fragmentation of wake*, *The Sixth Marcel Grossmann Meeting on recent developments in theoretical and experimental general relativity, gravitation and relativistic field theories*, ed. by H. Sato, (June 23-29, Kyouto, 1991), 964.
12. S. Miyoshi, and T. Hara, *Cosmic strings and large-scale structure of the universe, Clusters and Superclusters of Galaxies*, ed. by M.M. Colless, A. Babul, A.C. Edge, R.M. Johnstone, and S. Raychaudhury,(July 1-12, Cambridge, 1991), 133.
13. T. Hara, P. Mähönen, and S. Miyoshi, *Large Scale Peculiar Velocity Field by Open Cosmic String* 13th International Conference on General Relativity and Gravitation ed. by P. Lamberti and O. Ortiz (June 28-July 4, 1992, Huerta Grande-Cordoba, Argentina), 439.
14. T. Hara, and S. Miyoshi, *Comparison of three orthogonal crossed wakes with the CfA Large -scale Structure* 13th International Conference on General Relativity and Gravitation ed. by P. Lamberti and O. Ortiz (June 28-July 4, 1992, Huerta Grande-Cordoba, Argentina), 440.

15. P. Mähönen, T. Hara, and S. Miyoshi, *Structure formation and fragmentation by infinitely long cosmic strings*, Yamada Conference, *Evolution of the universe and its observational quest*, (June 8-12, 1993, Tokyo), 495.
16. S. Miyoshi, M. Matsuura, H. Yamamoto, P. Mähönen, and T. Hara *For the effects of long cosmic strings on the anisotropies of cosmic background radiation*, Yamada Conference, *Evolution of the universe and its observational quest*, (June 8-12, 1993, Tokyo), 443.
17. S. Miyoshi, M. Matsuura, H. Yamamoto, P. Mähönen, and T. Hara *Dark matter distribution around a cluster of galaxies under the long cosmic string scheme*, Yamada Conference, *Evolution of the universe and its observational quest*, (June 8-12, 1993, Tokyo), 495.
18. T. Hara, Hideki Yamamoto, P. Mähönen, and S. Miyoshi, *Characteristic Features of Clusters of Galaxies in the long Cosmic String Scheme*, the 2-nd William Fairbank Conf. by R. Ruffini, C. Everitt, and A. X. Yu (Dec 13-16, 1993, Hong Kong), 31.
19. T. Hara, Masakazu Matsuura, Hideki Yamamoto, P. Mähönen, and S. Miyoshi, *Dark Matter around a Cluster of Galaxies in the long Cosmic String Scheme*, the 2-nd William Fairbank Conf. by R. Ruffini, C. Everitt, and A. X. Yu (Dec 13-16, 1993, Hong Kong), 32.
- 20 T. Hara, *On the dark matter distribution around a cluster of galaxies in the cosmic string scheme*, "Clusters of Galaxies, Proceedings of the 29th Rencontre de Moriond", 14th Moriond Astrophysics Meetings, edited by F. Durret, A. Mazure and J. Tran Thanh Van, (Mar. 12-19 1994, Meribel, Savoie, France), 397.
- 21 T. Hara, P. Mähönen, and S. Miyoshi, *Inhomogeneity of Cold Dark Matter due to Initial Fluctuations in the Cosmic String Scheme* Int. Workshop on "Large Scale Structure in the Universe", by J. Mucket et al. (Sep 18-24 1994, Potsdam, Germany.
Vistas in Astronomy, **37** (1993), 515.
22. T. Hara, *On the Formation of Astronomical Objects in the Cosmic String Scheme*, "Cosmological Constant and the Evolution of the Universe", ed. by K. Sato, T. Sugino, and T. Sugiyama, (Nov. 7-10, Tokyo, 1996), 255.
23. T. Hara, P. Mähönen, and S. Miyoshi, *On the Hierarchical Structure of Astronomical Objects with Cold Dark Matter in the Long Cosmic String Scheme*, "Dark matter in the Universe and its Direct Detection", ed. by M. Minowa, (Nov. 26-28, 1996 Tokyo) 97.
24. T. Hara, S. Miyoshi, and P. Mähönen, *On the Formation of Hierarchical Objects in the Cosmic String Scheme*, the 8-th Marcell Grossmann Meeting (22-27 June 1997), (Jerusalem, Israel), B1293.
25. T. Hara, S. Miyoshi, and P. Mähönen, *Formation Mechanism of Hierarchical Astronomical Objects in the Cosmic String Scheme*, "Proceedings of the IAU 183rd symposium "Cosmological Parameters and the Evolution of the Universe" (Kyoto, Aug.18-22, 1997), 249.

26. T. Hara and Akira Hiraoka *On the Origin of Globular Clusters - Hierarchical Structure of Astronomical Objects in the Cosmic String Scheme-*, the 3-rd RESCEU Symp. "Particle Cosmology", (10-13 Nov. 1997), (Tokyo), 257.
27. S. Miyoshi, T. Hara, and P. Mähönen, *Hierarchical Structure Formation in the Universe Using Cosmic Strings*, *The Physics of Galaxy Formation*, ASP Conference Proceedings, **222** (2001), 247.
28. T. Hara, S. Miyoshi, and P. Mähönen, , *Proceedings IAU XXVI Gen. Assembly*, (13-26 July 2003), (Sydney, Australia)
29. T. Hara and Keita Sakai, *On the Entropy of Black Hole, de Sitter and Rindler Spaces* *Frontiers in Astroparticle physics and Cosmology* ed. by K. Sato and S. Nagataki, (Univ. Academy Press, Inc. Tokyo, Japan, 2004) 377.
30. T. Hara, Keita Sakai, Schuhei Kunitomo, and Daigo Kajiura, *The Entropy Increase in the Black Hole Formation - Free Expansion in the Enlarged Volume of the Black Hole*, *Proceedings IAU XXVI Gen. Assembly*. IAU Symp. 238 (14-25, Aug. 2006, Prague, Czech), 377.
31. T. Hara, Keita Sakai, Schuhei Kunitomo, and Daigo Kajiura, *Uncertainty Principle for the Entropy Estimation of Black Holes, de Sitter Space and Rindler Space*, *Proceedings IAU XXVI Gen. Assembly*, IAU Symp. 238 (14-25, Aug. 2006, Prague, Czech), *Black Holes from Stars to Galaxies-Across the range of Masses* ed. by V. Karas and G. Matt, (2007) 379.
32. T. Hara, Masanobu Shigeyasu, Kazuma Takagi, and Daigo Kajiura, *On the Transfer of the Meteorites (and Life?) from Earth to the Gl581 System*, XV Int. Con. Origin of Life (24-29, 2008), (Florence, Italy), 230.
33. T. Hara, K. Takagi, and D. Kajiura, *Transfer of the Meteorites from Earth to the Interesting Objects within the Solar System and the Extrasolar Planets*. Ast. Soc. Pacific Conf. **430**, *Pathways Towards Habitable Planets* (14-18 Sep. 2009, Barcelona, Spain), 455.
34. T. Hara, *On the Search for dark energy potentials in quintessence*. The 8th International Conference on Gravitation and Cosmology (ICGC) at The Indian Institute of Science Education and Research Mohali (IISERM), during December 14 - 18, 2015 in Chandigarh, India.
35. T. Hara, *Quest for Potentials in Quintessence Scenario*. The 2nd Conference on Astrophysics and Space Science (APSS 2016) from February 28 to March 1, 2016 in Beijing, China.
36. T. Hara, *Thawing model seems to be preferable for dark energy potential in the quintessence scenario*. "Varying Constants and Fundamental Cosmology" VARCOSMOFUN '16 from 12th to 17th September 2016 in Szczecin, Poland.

(著 書)

1. 宇宙物理学 共著 1983年4月 朝倉書店
宇宙物理学全般に関する参考書（学部3回生以上～大学院生対象）佐藤文隆氏と共に著
2. 物理学 その現代的アプローチ 共著 1989年4月 東京教学社
物理学全般に関する参考書（理工系の大学初年級～4年生対象）
原康夫・桜井邦明ほか9人による分担執筆。元素の起源と天体核現象を担当
3. 一般相対論入門（フォスター・ナイチンゲール著）翻訳 1991年4月 吉岡書店
大学3年生以上を対象とした一般相対論の入門書

(解説)

1. 高エネルギーニュートリノの起源（佐藤文隆氏と共に著）月刊 フィジックス, **1**(1979), 533.
2. 原始宇宙のエネルギーの「ひも」：宇宙のひも (1), (2), (3), 天文ガイド、**3**(1987), 75,
4(1987), 76, **5**(1987), 76
3. 超新星とニュートリノ 計測と制御 **10** (1987), 910.
4. 時空の相対性 数学セミナー **1** (1993), 28.

(その他)

1. 銀河の形成 謎を解くX粒子 京都新聞 昭和59年(1984)1月8日 “新人”.
2. 宇宙誕生から終焉 京都産業大学図書館報 平成3年(1994)7月5日 “特集 ザ・宇宙”.
3. 3Kのゆらぎ発見 京都産業大学報 平成6年(1994)5月27日 “神山八景”.
4. 宇宙の大規模構造 京都産業大学報 平成8年(1996)11月26日 “第34回本学市民講座”.
5. 夜空をながめて、時には宇宙のロマンを語ろう（早稲田大学 前田恵一 教授との対談）
学研 平成14年(2002) “夢学問のススメ”（進路・進学「ちがい」事典）, p 40.
6. 注目 京都産業大学 “…WMAP…” 平成15年(2003)11月30日
“わかる！ 理科系の最先端-大学ランキング 河合塾編”（角川出版）, p 17.
7. Spot Light 京都産業大学 “…WMAP…” 平成17年(2005)11月30日
“学問前線（理科系100分野の大学）学科専攻ランキング 河合塾編”, p 293.
8. 日本物理学会 2012年秋季大会 京都産業大学開催 実行委員会委員(9月11日～14日).

9. 皆さん元気にやっていますか？ 京都産業大学同窓会報 平成27年(2015)9月1日
”恩師隨想”, p 23.

(Not yet published)

1. T. Hara, *Lightning in the Planetary Atmospheres and in the Primordial Solar Nebula*, (1976) not appeared in the Journal.
2. T. Hara, Kouji Imai, Masahiro Nakajima, Naomichi Yamamoto, and Toru Hirayama *On the Interpretation of the Cosmic Microwave Background Anisotropy -A Simplified Method to Calculate the CMB Anisotropy-*, (1992) not appeared in the Journal.