

Peer-Reviewed Papers

- (1) U. A. Acharya, S. Hasegawa, H. Sako, S. Sato, K. Tanida, et al. (PHENIX Collaboration)
Transverse-single-spin asymmetries of charged pions at midrapidity in transversely polarized p+p collisions at $\sqrt{s}=200$ GeV
Phys. Rev. D **105** (2022) 3, 032003.
- (2) U. A. Acharya S. Hasegawa, H. Sako, S. Sato, K. Tanida, et al. (PHENIX Collaboration), Systematic study of nuclear effects in p +Al, p+Au, d+Au, and $^3\text{He}+\text{Au}$ collisions at $\sqrt{s_{\text{NN}}}=200$ GeV using π^0 production
Phys. Rev. C **105** (2022) 064902.
- (3) U. A. Acharya S. Hasegawa, H. Sako, S. Sato, K. Tanida, et al. (PHENIX Collaboration),
Transverse single spin asymmetries of forward neutrons in p+p, p+Al and p+Au collisions at $\sqrt{s_{\text{NN}}}=200$ GeV as a function of transverse and longitudinal momenta
Phys. Rev. D **105** (2022) 3, 032004.
- (4) U. A. Acharya S. Hasegawa, H. Sako, S. Sato, K. Tanida, et al. (PHENIX Collaboration),
Kinematic dependence of azimuthal anisotropies in p+Au, d+Au, and $^3\text{He}+\text{Au}$ at $\sqrt{s_{\text{NN}}}=200$ GeV
Phys. Rev. C **105** (2022) 2, 024901.
- (5) K. Miwa, M. Fujita, T. K. Harada, S. Hasegawa, M. Ichikawa, Y. Ichikawa, K. Imai, S. H. Kim, M. Naruki, T. Nanamura, H. Sako, S. Sato, H. Tamura, K. Tanida, T. O. Yamamoto, et al.
Precise measurement of differential cross sections of the $\Sigma^- p \rightarrow \Lambda n$ reaction in momentum range 470–650 MeV/c
Phys. Rev. Lett. **128**, 072501 (2022).
- (6) U. Gebauer, K. Tanida, et al. (Belle Collaboration)
Measurement of the branching fractions of the $B^+ \rightarrow \eta \ell^+ \nu_\ell$ and $B^+ \rightarrow \eta' \ell^+ \nu_\ell$ decays with signal-side only reconstruction in the full q^2 range
Phys. Rev. D **106**, 032013 (2022).
- (7) M. Fujita, H. Tamura, K. Tanida, T. O. Yamamoto, et al.,
Development of a Ge detector array and an in-beam calibration system for highly precise measurement of Ξ^- atomic X rays
Nucl. Inst. and Meth. A **1042**, 167439 (2022).
- (8) U. A. Acharya S. Hasegawa, H. Sako, S. Sato, K. Tanida, et al. (PHENIX Collaboration),
Study of ϕ -meson production in p+Al, p+Au, d+Au, and $^3\text{He}+\text{Au}$ collisions at $\sqrt{s_{\text{NN}}}=200$ GeV,
Phys. Rev. C **106**, 014908 (2022).
- (9) U. A. Acharya S. Hasegawa, H. Sako, S. Sato, K. Tanida, et al. (PHENIX Collaboration),
Measurement of $\psi(2S)$ nuclear modification at backward and forward rapidity in p + p, p+Al, and p+Au collisions at $\sqrt{s_{\text{NN}}}=200$ GeV
Phys. Rev. C **105**, 064912 (2022) (chosen as an Editor's Suggestion).
- (10) Y. B. Li, K. Tanida, et al. (Belle Collaboration)
First test of Lepton Flavor Universality in the charmed baryon decays $\Omega^0 c \rightarrow \Omega^- \ell^+ \nu_\ell$ using data of

the Belle experiment

Phys. Rev. D **105**, L091101 (2022).

- (11) Y.-C. Chen, K. Tanida, et al. (Belle Collaboration)
Measurement of two-particle correlations of hadrons in e^+e^- collisions at Belle
Phys. Rev. Lett. **128**, 142005 (2022).
- (12) T. Bloomfield, K. Tanida, et al. (Belle Collaboration)
Measurement of the branching fraction and CP asymmetry for $B \rightarrow \bar{D}^0 \pi$ decays
Phys. Rev. D **105**, 072007 (2022).
- (13) C. Hadjivasiliou, K. Tanida, et al. (Belle Collaboration)
Search for B^0 meson decays into Λ and missing energy with a hadronic tagging method at Belle
Phys. Rev. D **105**, L051101 (2022).
- (14) S. Jia, K. Tanida, et al. (Belle Collaboration)
Search for a light Higgs boson in single-photon decays of $Y(1S)$ using $Y(2S) \rightarrow \pi^+\pi^-Y(1S)$ tagging method
Phys. Rev. Lett. **128**, 081804 (2022).
- (15) T. Hashimoto, K. Tanida, et al.
Measurements of strong-interaction effects in kaonic-helium isotopes at sub-eV precision with X-ray microcalorimeters
Phys. Rev. Lett. **128**, 112503 (2022).
- (16) X. Y. Gao, K. Tanida, et al. (Belle Collaboration)
Search for tetraquark states $Xcc\bar{s}\bar{s}$ in $D^+s D^+s$ ($D^{*+}s D^{*+}s$) final states at Belle
Phys. Rev. D **105**, 032002 (2022).
- (17) B. Bhuyan, K. Tanida, et al. (Belle Collaboration)
Search for the decay $B_s^0 \rightarrow \eta \eta$
Phys. Rev. D **105**, 012007 (2022).
- (18) E. Waheed, K. Tanida, et al. (Belle Collaboration)
Study of $B^0 \rightarrow D^+h^-$ ($h = K/\pi$) decays at Belle
Phys. Rev. D **105**, 012003 (2022).
- (19) B. Wang, K. Tanida, et al. (Belle Collaboration)
Measurement of $B(Bs \rightarrow DsX)$ with Bs Semileptonic Tagging
Phys. Rev. D **105**, 012004 (2022).
- (20) Y. Li, K. Tanida, et al. (Belle Collaboration)
Measurements of the branching fractions of $\Xi_c^0 \rightarrow \Lambda K_s^0$, $\Xi_c^0 \rightarrow \Sigma^0 K_s^0$, and $\Xi_c^0 \rightarrow \Sigma^+ K^-$ decays at Belle
Phys. Rev. D **105**, L011102 (2022).
- (21) J. K. Ahn, S. Hasegawa, Y. Ichikawa, S. H. Kim, H. Sako, S. Sato, K. Tanida, et al,
Superconducting dipole magnet for Hyperon spectrometer
Nucl. Instrum. Meth. A **1047** (2023) 167775.

- (22) T. Nanamura, M. Fujita, T. K. Harada, S. Hasegawa, M. Ichikawa, Y. Ichikawa, K. Imai, S. H. Kim, M. Naruki, H. Sako, S. Sato, H. Tamura, K. Tanida, T. O. Yamamoto et al.,
Measurement of differential cross sections for Σ^+p elastic scattering in the momentum range 0.44-0.80 GeV/c.
Phys. Theor. Exp. Phys. **2022** 093D01 (2022) (Editor's Choice).
- (23) Y. Hino, T. Dodo, S. Hasegawa, R. Ujiie, et al.
Characterization of the correlated background for a sterile neutrino search using the first dataset of the JSNS2 experiment
Eur. Phys. J. C **82** (2022) 331.
- (24) D. Yan, T. Hashimoto, et al.
Absolute energy measurements with superconducting transition-edge sensors for muonic X-ray spectroscopy at 44 keV
J. Low Temp. Phys. **209** (2022) 271-277.
- (25) M. Fujita, H. Ekawa, S. Hasegawa, S. H. Hayakawa, K. Hosomi, M. Ichikawa, Y. Ichikawa, S. H. Kim, T. Nanamura, H. Sako, S. Sato, H. Tamura, T. O. Yamamoto, J. Yoshida et al.,
 Ξ^- atomic X-ray spectroscopy using a counter-emulsion hybrid method
Phys. Theor. Exp. Phys. **2022** 123D01 (2022).
- (26) W. Li, T. Hashimoto, et al.
High-Sensitive XANES Analysis at Ce L2-Edge for Ce in Bauxites Using Transition-Edge Sensors: Implications for Ti-Rich Geological Samples
Anal. Chim. Acta 340755 (2022).
- (27) S. Aikawa, T. Akaishi, T. Hashimoto, K. Tanida, et al. (J-PARC E31 collaboration)
Pole Position of $\Lambda(1405)$ Measured in $d(K^-,n)\pi\Sigma$ Reactions
Phys. Lett. B 137637 (2022).
- (28) Y. Akazawa, H. Tamura, T. Nanamura et al.,
Development and application of CATCH: A cylindrical active tracker and calorimeter system for hyperon-proton scattering experiments
Nucl. Instr. Meth. A **1029**, 166430 (2022)
- (29) S. Nakasuga, M. Ichikawa, M. Naruki, H. Sako, S. Sato, et al.,
Commissioning of the electron identification system for the dilepton measurement in $p+A$ collisions at J-PARC
Nucl. Instr. Meth. A **1041** (2022) 167335.
- (30) S. Patra, K. Tanida, et al. (Belle Collaboration)
Search for charged lepton flavor violating decays of $Y(1S)$
J. High Energ. Phys. **05** (2022) 095.
- (31) K. Inami, K. Tanida, et al. (Belle Collaboration)
An improved search for the electric dipole moment of the τ lepton
J. High Energ. Phys. **04**, 110 (2022).

- (32) S.X. Li, K. Tanida, et al. (Belle Collaboration)
 First Measurement of the $\Lambda_c^+ \rightarrow p \eta'$ decay,
 J. High Energ. Phys. **03**, 090 (2022).
- (33) F. Abudin'en, K. Tanida, et al. (Belle & Belle II Collaborations)
 Combined analysis of Belle and Belle II data to determine the CKM angle ϕ_3 using $B^+ \rightarrow D(K^0_s h^- h^+) h^+$ decays
 J. High Energ. Phys. **02**, 063 (2022).
- (34) K. Ozawa, K. Ebata, M. Ichikawa, S. Nakasuga, M. Naruki, H. Sako, S. Sato, et al,
 Towards the measurement of the mass modifications of vector mesons in a finite density matter
 Acta Phys. Pol. A **142** (2022) 399-404.
- (35) K. Miwa, T. Nanamura, M. Fujita, S. Hasegawa, M. Ichikawa, Y. Ichikawa, S. H. Kim, M. Naruki,
H. Sako, S. Sato, H. Tamura, K. Tanida, T. O. Yamamoto, et al.
 Recent progress and future prospects of hyperon nucleon scattering experiment
 EPJ Web Conf. **271** (2022) 04001.
- (36) K. Ozawa, Y. Ichikawa, Y. Miake, M. Naruki, T. Sakaguchi, H. Sako, S. Sato, K. H. Tanaka, et al.,
 The J-PARC heavy ion project
 EPJ Web Conf. **271** (2022) 11004.
- (37) Y. Ichikawa, M. Fujita, S. Hasegawa, S. H. Kim, T. Nanamura, H. Sako, S. Sato, H. Tamura, K. Tanida, T. O. Yamamoto, et al.
 High resolution spectroscopy of the “ ΣN cusp” by using the $d(K^-, \pi^-)$ reaction
 EPJ Web Conf. **271** (2022) 02012
- (38) T. Gogami, K. Ebata, M. Fujita, S. Hasegawa, Y. Ichikawa, S. H. Kim, T. Nanamura, M. Naruki, H. Sako, S. Sato, H. Tamura, K. Tanida, T. O. Yamamoto, et al.
 Strangeness physics programs by S-2S at J-PARC
 EPJ Web Conf. **271** (2022) 11002.
- (39) M. Fujita, H. Ekawa, S. H. Hayakawa, H. Tamura, T. O. Yamamoto, J. Yoshida et al.,
 Results of the Ξ^- atomic X-ray measurement in J-PARC E07
 EPJ Web of Conf. **271** (2022) 03005
- (40) K. Kamada, M. Fujita and H. Tamura
 Feasibility study for measurement of beta-decay rates of Λ hypernuclei
 EPJ Web of Conf. **271** (2022) 01009
- (41) F. Oura, M. Fujita, H. Tamura, T. O. Yamamoto et al.,
 Development of a triple coincidence method of reaction, gamma-ray, and weak decay in the hypernuclear gamma- ray spectroscopy at J-PARC
 EPJ Web of Conf. **271** (2022) 11007
- (42) K. Ebata, M. Fujita, T.K. Harada, Y. Ichikawa, T. Nanamura, H. Tamura, T. O. Yamamoto, et al.
 Preparation status of missing-mass spectroscopy for Ξ hypernuclei with S-2S magnetic spectrometer

- EPJ Web Conf. **271** (2022) 03008.
- (43) T.K. Harada, K. Ebata, Y. Ichikawa, T. Nanamura, T. O. Yamamoto, et al.
High resolution spectroscopy of Ξ hypernuclei with active fiber target
EPJ Web Conf. **271** (2022) 03006.
- (44) T. O. Yamamoto, M. Fujita, T.K. Harada, Y. Ichikawa, H. Tamira, K. Tanida, et al.
X ray spectroscopy on Ξ^- atoms (J-PARC E03, E07 and future)
EPJ Web Conf. **271** (2022) 03001.
- (45) T. Sakao, T. Nanamura, T. Yamamoto, et al.
 Λ polarization measurement of the $\pi^- p \rightarrow K^0 \Lambda$ reaction in J-PARC E40 experiment
EPJ Web Conf. **271** (2022) 02008.
- (46) T. Nanamura, T.O. Yamamoto, et al.
Results of analysis of $\Sigma^+ p$ scattering events in J-PARC E40 experiment: differential cross sections and phase shifts of 3S1 and 1P1 states
EPJ Web Conf. **271** (2022) 04002.
- (47) F. Sakuma, Y. Ichikawa, H. Tamura, K. Tanida, T.O. Yamamoto, et al.
J-PARC hadron experimental facility extension project
EPJ Web Conf. **271** (2022) 11001.
- (48) T. O. Yamamoto, M. Fujita, T. Harada, Y. Ichikawa, H. Tamura, K. Tanida, et al.
X-ray spectroscopy experiments on exotic Ξ^- atoms at J-PARC
PoS PANIC2021 (2022) 211.
- (49) T. Akaishi, T. Hashimoto, K. Tanida, et al.
Comparison of ${}^3_\Lambda\text{H}/{}^4_\Lambda\text{H}$ Production Cross-Section via (K^-, π^0) Reaction at J-PARC
EPJ Web of Conf. **271**, 01003 (2022).
- (50) Y. Ma, T. Akaishi, T. Hashimoto, K. Tanida, et al.
Status of J-PARC E73 experiment: first direct Hypertriton lifetime measurement with ${}^3\text{He}(K^-, \pi^0)$ ${}^3_\Lambda\text{H}$ reaction"
Suplemento de la Revista Mexicana de Fisica 30308120 (2022) 1-3.
- (51) F. Sakuma, T. Hashimoto, K. Tanida, et al.
Summary of the $K^- pp$ bound-state observation in E15 and future prospects
EPJ Web of Conf. **262**, 01008 (2022).
- (52) Y. Ichinohe, T. Hashimoto, et al.
Application of Deep Learning to the Evaluation of Goodness in the Waveform Processing of Transition-Edge Sensor Calorimeters
J. Low Temp. Phys. **209**, 1008 (2022).
- (53) H. Tamura
Overview of hypernuclear and strange particle physics –Experimental summary of HYP2022
EPJ Web of Conf. **271**, 12001 (2022).
- (54) H. Tamura

How can we solve the hyperon puzzle? —Introduction to “topical session on Λ NN three-body force”

EPJ Web of Conf. **271**, 06001 (2022).

(55) F. Oura, M. Fujita, H. Tamura, T.O. Yamamoto et al.

Development of a triple coincidence method of reaction, gamma-ray, and weak decay in the hypernuclear gamma-ray spectroscopy at J-PARC

EPJ Web of Conf. **271**, 11007 (2022).

(56) H. Tamura,

High-Precision γ -Ray Spectroscopy of Λ Hypernuclei

In: Tanihata, I., Toki, H., Kajino, T. (eds) “Handbook of Nuclear Physics”, Springer, Singapore (2023).

Invited Talks at International Conferences

(1) K. Tanida for the Belle collaboration

Charmed baryons and excited hyperons at Belle

The 13th International Workshop on the Physics of Excited Nucleons (NSTAR2022)

Genova, Oct. 17-21, 2022.

(2) K. Tanida for the Belle and Belle II collaborations

Recent results from e^+e^- collisions at Belle and Belle II

Exotics and Exotic phenomena in Heavy Ion Collision (ExHIC), Pohang, Sep. 29-Oct. 1, 2022.

(3) K. Tanida for the Belle and Belle II collaborations

Exotic hadrons at Belle and Belle II

Invited talk in 14th International Conference on Hypernuclear and Strange Particle Physics

(HYP2022), Prague, June 27-July 1, 2022.

(4) H. Sako

Studies of baryon resonances with meson beams at J-PARC -J-PARC E45 and E72-,

APCTP Workshop on Nuclear Physics 2022, Jeju, 11-16 July 2022.

(5) H. Sako

Studies of ϕ meson mass modification inside nuclei through K^+K^- decay (J-PARC E88)

Reimei Workshop "Polarization phenomena and Lorentz symmetry violation in dense matter",

2022/10/8, Seoul, Korea

(6) K. Tanaka

J-PARC Heavy-Ion Project

The 2022 Asian Nuclear Physics Association (ANPhA) symposium on nuclear physics facilities in Asia (ANPhA 2022). Nov. 17, 2022, Shenzhen, China (Online).

(7) J-PARC E90: High resolution spectroscopy of the Σ N cusp by using $d(K^-, \pi^-)$ reaction

Y. Ichikawa

Joint THEIA-STRONG2020 and JAEA/Mainz REIMEI Web-Seminar, (online Jan 2022)

- (8) Kaonic nuclei search from inclusive $^{12}\text{C}(\text{K}^-, \text{p})$ measurement at J-PARC
Y. Ichikawa
International workshop on "Hadron physics with kaon beam and related topics", (online Oct. 2022)
- (9) High resolution spectroscopy of " ΣN cusp" (J-PARC E90) and HypTPC experiments
Y. Ichikawa
Workshop on "Physics of heavy quark and exotic hadrons 2023", Ibaraki Jan 2023.
- (10) T.O. Yamamoto, "X-ray spectroscopy on Xi atoms (J-PARC E03, E07 and future)",
14th International Conference on Hypernuclear and Strange Particle Physics (HYP2022), Prague,
June 27-July 1, 2022.
- (11) Experimental study of the four-body kaonic nuclear state, $\bar{K}NNN$
T. Hashimoto
EXOTIC atoms meet nuclear COLLisions for a new frontier precision era in low-energy strangeness
nuclear physics (EXOTICO)
Trento, Italy / online, Oct. 17-21, 2022.
- (12) Experimental study of kaonic nuclei and kaonic atoms at J-PARC
T. Hashimoto
The 15th Asia Pacific Physics Conference (APPC15)
Korea (online), Aug. 21-26, 2022.
- (13) Just what is it that makes the extension project of J-PARC Hadron Facility so appealing?
H. Tamura
2nd Int. Workshop on the Extension Project for the J-PARC Hadron Experimental Facility (J-
PARC HEF-ex WS) online, Feb. 16-18, 2022.
- (14) Hypernuclear physics overview: Highlights from running experiments and perspectives
H. Tamura
14th International Conference on Hypernuclear and Strange Particle Physics (HYP2022), Prague,
June 27-July 1, 2022.
- (15) Introduction to "Topical Session on ΛNN three-body force"
H. Tamura
14th International Conference on Hypernuclear and Strange Particle Physics (HYP2022), Prague,
June 27-July 1, 2022.
- (16) Studies of baryon-baryon interaction at J-PARC
H. Tamura
International Conference on the Structure of Baryons (Baryon 2022), Seville, Spain, November 7-
11, 2022.
- (17) Challenge at J-PARC to solve the hyperon puzzle in neutron stars
H. Tamura
Fudan University Open Seminar in Frontier in Nuclear Physics, online, December 28, 2022.
- (18) Recent results and prospects in hypernuclear physics

H. Tamura

EMMI workshop “4th Workshop on Anti-Matter, Hyper-Matter and Exotica Production at the LHC”, Bologna, Italy, February 13-17, 2023.

(19) Spectroscopy of Λ Hypernuclei

H. Tamura

NUSPEQ2023 - International Symposium on Nuclear Spectroscopy for Extreme Quantum Systems, Numazu, Japan, March 7-9, 2023.

Books and Scientific Articles

(1) X. Luo, Q. Wang, N. Xu, P. Zhuang, eds., Y. Nara, T. Nonaka, H. Sako, et al.,

Properties of QCD Matter at High Baryon Density, 2022, Springer.

(2) S.N. Nakamura, S. Nagao, H. Tamura and T.O. Yamamoto

ラムダ粒子は、陽子と中性子を区別できるか？ —ラムダハイパー核における荷電対称性の破れ
日本物理学会誌 77 (5), 287 (2022).

Patents

None

Awards

JAEA Chief Director's Award for research and development

Tadashi Hashimoto

Renovation of the exotic atom research with the introduction of a superconducting X-ray detector

R4 年度理事長表彰 研究開発功績賞

橋本直

超伝導 X 線検出器の導入によるエキゾチック原子研究の革新

Press Release

(1) The “core” between quarks is caught

- Contributing to understanding the reason why material can exist stably -

クォーク間の「芯」をとらえた

— 物質が安定して存在できる理由の理解に貢献 —

七村拓野他、2022 年 9 月

T. Nanamura, et al, Prog. Theor. Exp. Phys. 2022 093D01 (Editor's Choice)

(2) A strange particle composed of a K^- meson and a proton

- Successful direct measurement of complex mass of the $\Lambda(1405)$ hyperon -

K^- 中間子と陽子が織りなす風変わりな粒子

— $\Lambda(1405)$ ハイペロンの複素質量の直接測定に成功—

橋本直他 2023 年 1 月 26 日

Pole position of $\Lambda(1405)$ measured in $d(K^-,n)\pi\Sigma$ reactions

S. Aikawa, [T. Hashimoto](#), et al., Phys. Lett. B 137637 (2022).