So Chigusa

Curriculum Vitae

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EDUCATION

2017 Apr. 1 – 2020 Mar. 31	Ph.D. in Physics, Department of Physics, University of Tokyo
2015 Apr. 1 – 2017 Mar. 31	M.S. in Physics, Department of Physics, University of Tokyo
2011 Apr. 1 – 2015 Mar. 31	B.S. in Physics, Department of Physics, University of Tokyo

PROFESSIONAL APPOINTMENTS

2024 Sep. 1 –	Postdoctoral Fellow, Massachusets Institute of Technology
2020 Sep. 1 – 2024 Aug. 31	Postdoctoral Fellow, Lawrence Berkeley National Laboratoy
2020 Apr. 1 – 2020 Aug. 31	Postdoctoral Fellow, High Energy Accelerator Research Organization (KEK)

AWARDS AND HONORS

2020 Best presentation award for young scientists for Unraveling the History of the Universe 2020

2019 Best Poster Award for HPNP 2019

GRANTS AND FELLOWSHIPS

2020 Research Fellowships for Young Scientists (PD), JSPS (3100000 JPY)

2017 Research Fellowships for Young Scientists (DC1), JSPS (2800000 JPY)

2015 Program for Leading Graduate Schools, MEXT

TEACHING EXPERIENCES

2015 Teaching Assistant for an undergraduate course "Quantum Mechanics II", Department of Physics, University of Tokyo, Apr.–Sep.

PUBLICATIONS

[1] S. Chigusa, T. Kasamaki, T. Kusano, T. Moroi, K. Nakayama, N. Ozawa et al., *Dark matter detection using optically trapped Rydberg atom tweezer arrays*, 2507.12860.

[2] S. Chigusa, S. Girmohanta, Y. Nakai and Y. Zhang, *Interplay of ALP couplings at a muon collider*, *JHEP* **07** (2025) 003 [2502.18912].

[3] E.D. Herbschleb, S. Chigusa, R. Kawase, H. Kawashima, M. Hazumi, K. Nakayama et al., *Robust sensing via the standard deviation with a quantum sensor*, *APL Quantum* **1** (2024) 046106.

[4] T. Sichanugrist, H. Fukuda, T. Moroi, K. Nakayama, S. Chigusa, N. Mizuochi et al., *Entanglement-enhanced ac magnetometry in the presence of Markovian noise*, *Phys. Rev. A* **111** (2025) 042605 [2410.21699].

[5] S. Chigusa, M. Hazumi, E.D. Herbschleb, Y. Matsuzaki, N. Mizuochi and K. Nakayama, *Nuclear spin metrology with nitrogen vacancy center in diamond for axion dark matter detection*, *Phys. Rev. D* **111** (2025) 075028 [2407.07141].

[6] C.W. Bauer, S. Chigusa and M. Yamazaki, *Quantum parton shower with kinematics*, *Phys. Rev. A* **109** (2024) 032432 [2310.19881].

[7] S. Chigusa, A. Ito, K. Nakayama and V. Takhistov, *Effects of finite material size on axion-magnon conversion*, *JHEP* **01** (2024) 185 [2310.17704].

[8] S. Chigusa, S. Girmohanta, Y. Nakai and Y. Zhang, *Aiming for tops of ALPs with a muon collider*, *JHEP* **01** (2024) 077 [2310.11018].

[9] S. Chigusa, D. Kondo, H. Murayama, R. Okabe and H. Sudo, *Axion detection via superfluid ^{3}He ferromagnetic phase and quantum measurement techniques*, *JHEP* **09** (2024) 191 [2309.09160].

[10] S. Chigusa, T. Moroi, K. Nakayama and T. Sichanugrist, *Dark matter detection using nuclear magnetization in magnet with hyperfine interaction*, *Phys. Rev. D* **108** (2023) 095007 [2307.08577].

[11] S. Chigusa, T. Moroi and Y. Shoji, *Stability of electroweak vacuum and supersymmetric contribution to muon $g-2$*, *JHEP* **11** (2023) 027 [2306.16596].

[12] S. Chigusa, M. Hazumi, E.D. Herbschleb, N. Mizuochi and K. Nakayama, *Light dark matter search with nitrogen-vacancy centers in diamonds*, *JHEP* **03** (2025) 083 [2302.12756].

[13] S. Chigusa and M. Yamazaki, *Quantum simulations of dark sector showers*, *Phys. Lett. B* **834** (2022) 137466 [2204.12500].

[14] S. Chigusa, T. Moroi and Y. Shoji, *Upper bound on the smuon mass from vacuum stability in the light of muon $g-2$ anomaly*, *Phys. Lett. B* **831** (2022) 137163 [2203.08062].

[15] S. Chigusa, S. Li, Y. Nakai, W. Zhang, Y. Zhang and J. Zheng, *Deeply learned preselection of Higgs dijet decays at future lepton colliders*, *Phys. Lett. B* **833** (2022) 137301 [2202.02534].

[16] S. Chigusa, K. Hamaguchi, T. Moroi, A. Niki and K. Ono, *Studying squark mass spectrum through gluino decay at 100 TeV future hadron colliders*, *Phys. Lett. B* **817** (2021) 136332 [2102.07910].

[17] S. Chigusa, T. Moroi and K. Nakayama, *Axion/hidden-photon dark matter conversion into condensed matter axion*, *JHEP* **08** (2021) 074 [2102.06179].

[18] S. Chigusa, Y. Nakai and J. Zheng, *Implications of gravitational waves for supersymmetric grand unification*, *Phys. Rev. D* **104** (2021) 035031 [2011.04090].

[19] S. Chigusa, T. Moroi and Y. Shoji, *Precise Calculation of the Decay Rate of False Vacuum with Multi-Field Bounce*, *JHEP* **11** (2020) 006 [2007.14124].

[20] S. Chigusa, M. Endo and K. Kohri, *Constraints on electron-scattering interpretation of XENON1T excess*, *JCAP* **10** (2020) 035 [2007.01663].

[21] S. Chigusa, T. Moroi and K. Nakayama, *Detecting light boson dark matter through conversion into a magnon*, *Phys. Rev. D* **101** (2020) 096013 [2001.10666].

[22] S. Chigusa, *Probing Electroweakly Interacting Massive Particles with Drell-Yan Process at 100 TeV Colliders*, Ph.D. thesis, Tokyo U., 2020.

[23] S. Chigusa, Y. Hosomi, T. Moroi and M. Saito, *Determining Wino Lifetime in Supersymmetric Model at Future 100 TeV pp Colliders*, *Phys. Lett. B* **803** (2020) 135260 [1912.00592].

[24] S. Chigusa, T. Moroi and K. Nakayama, *Signals of Axion Like Dark Matter in Time Dependent Polarization of Light*, *Phys. Lett. B* **803** (2020) 135288 [1911.09850].

[25] S. Chigusa, T. Moroi and Y. Shoji, *Bounce Configuration from Gradient Flow*, *Phys. Lett. B* **800** (2020) 135115 [1906.10829].

[26] S. Chigusa, S. Kasuya and K. Nakayama, *Novel Flavon Stabilization with Trimaximal Neutrino Mixing*, *Phys. Rev. D* **100** (2019) 015030 [1905.11517].

[27] T. Abe, S. Chigusa, Y. Ema and T. Moroi, *Indirect studies of electroweakly interacting particles at 100 TeV hadron colliders*, *Phys. Rev. D* **100** (2019) 055018 [1904.11162].

[28] S. Asai, S. Chigusa, T. Kaji, T. Moroi, M. Saito, R. Sawada et al., *Studying gaugino masses in supersymmetric model at future 100 TeV pp collider*, *JHEP* **05** (2019) 179 [1901.10389].

[29] S. Chigusa, Y. Ema and T. Moroi, *Probing electroweakly interacting massive particles with Drell–Yan process at 100 TeV hadron colliders*, *Phys. Lett. B* **789** (2019) 106 [1810.07349].

[30] S. Chigusa, S. Kasuya and K. Nakayama, *Flavon Stabilization in Models with Discrete Flavor Symmetry*, *Phys. Lett. B* **788** (2019) 494 [1810.05791].

[31] S. Chigusa and K. Nakayama, *Anomalous Discrete Flavor Symmetry and Domain Wall Problem*, *Phys. Lett. B* **788** (2019) 249 [1808.09601].

[32] S. Chigusa, T. Moroi and Y. Shoji, *Decay Rate of Electroweak Vacuum in the Standard Model and Beyond*, *Phys. Rev. D* **97** (2018) 116012 [1803.03902].

[33] S. Chigusa, T. Moroi and Y. Shoji, *State-of-the-Art Calculation of the Decay Rate of Electroweak Vacuum in the Standard Model*, *Phys. Rev. Lett.* **119** (2017) 211801 [1707.09301].

[34] S. Chigusa and T. Moroi, *Bottom-Tau Unification in Supersymmetric SU(5) Models with Extra Matters*, *PTEP* **2017** (2017) 063B05 [1702.00790].

[35] S. Chigusa and T. Moroi, *Bottom-tau unification in a supersymmetric model with anomaly-mediation*, *Phys. Rev. D* **94** (2016) 035016 [1604.02156].

INVITED SEMINAR TALKS

PRESENTATIONS AT INTERNATIONAL CONFERENCES

(Poster)

PRESENTATIONS AT DOMESTIC CONFERENCES

(Poster)

SERVICE TO PROFESSION

Journal manuscript review work of the following journals

- Nature Communications
- Physical Review Letters
- Physical Review D
- Physics Letters B
- Journal of High Energy Physics
- Progress of Theoretical and Experimental Physics

SKILLS

Languages:	English – Fluent, Japanese – Native
Computer:	c++, Mathematica, Python, LaTeX