

Kohsaku TOBIOKA

Curriculum Vitae

INSTITUTION: Department of Physics, College of Arts and Sciences, Florida State University,
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EDUCATION

MARCH 2014 | Ph.D., Physics, University of Tokyo, Japan
Dissertation: “*Aspects of Supersymmetry after LHC Run I*”
Advisor: Prof. Hitoshi Murayama, Date of Completion: March 24, 2014

MARCH 2011 | M.Sc., Physics, University of Tokyo, Japan
Thesis: “*Physics of the Minimal Universal Extra Dimension model at the LHC experiments*”
Advisor: Prof. Hitoshi Murayama, Date of Completion: March 24, 2011

MARCH 2009 | B.Sc., Physics, Tohoku University, Japan
Date of Completion: March 25, 2009

EDUCATION AT OTHER INSTITUTIONS

SEPTEMBER 2012–MARCH 2013 | Visiting Student Researcher,
AND JANUARY–MAY 2012 | University of California, Berkeley, USA

SEPTEMBER 2007–JUNE 2008 | Exchange Student, major in Physics,
University of California, San Diego, USA

PROFESSIONAL EXPERIENCE

AUG 2024–PRESENT | *Associate Professor*
at Florida State University, USA

AUG 2018–AUG 2024 | *Assistant Professor*
at Florida State University, USA

JULY 2017–AUG 2018 | *Postdoctoral Associate*
at C.N. Yang Institute for Theoretical Physics,
Stony Brook University, USA

OCT 2014–JUNE 2017 | *Postdoctoral Fellow (joint appointment)*
at Tel Aviv University and Weizmann Institute of Science, Israel

APRIL–SEPT 2014 | *Postdoctoral Fellow*
at High Energy Accelerator Research Organization (KEK), Japan

OTHER PROFESSIONAL APPOINTMENTS

SEPT 2018–MAR 2026 | *Associate Researcher* at KEK Theory Center, Japan

RESEARCH INTERESTS

Theoretical Particle Physics: *Physics Beyond the Standard Model, Higgs boson, Collider phenomenology, Axion, Flavor physics, Neutrinos, High intensity experiments.*
Cosmology: *Dark matter, Big Bang nucleosynthesis.* Machine Learning for HEP.

HONORS AND AWARDS

APRIL 2026-JULY 2016	Japan Society for the Promotion of Science (JSPS) Invitational Fellowships for Research in Japan.
2024	PAI Award for Excellence in Teaching and Research, FSU.
APRIL 2014-MARCH 2016	JSPS Research Fellow for Young Scientists [PD].
APRIL 2012-MARCH 2014	JSPS Research Fellow for Young Scientists [DC2].

GRANTS

2024	FSU-CRC Summer Research Support. As a PI, project: “Mystery of Neutrinos After the Next Generation Experiments”. Total award \$20,000.
2023	Department of Energy DE-FOA-0002546, USA (DE-SC0010102). Supplemental funds for Okui and Tobioka. Total award \$21,000.
2022-2025	Department of Energy DE-FOA-0002546, USA (DE-SC0010102). As a Co-PI of FSU HEP-TH&EX group including 9 PIs, project: “Probing Testable New Physics at the Intensity and Energy Frontiers”. Total award \$2,720,000.
2021-2024	JSPS Grant-in-Aid for Scientific Research (B), Japan (No. 82118-041-15-0008) as a Co-PI with Motoi Endo (PI), Ryuichiro Kitano (Co-PI), Takemichi Okui (Co-PI). Project: “Exploring Quark and Lepton Structure via Light Particles”. Total award \$119,000.
2019-2022	Department of Energy DE-FOA-0001961, USA (DE-SC0010102). As a Co-PI of FSU HEP-TH&EX group including 8 PIs, project: “New Observables for New Physics at the Energy and Intensity Frontiers”. Total award \$2,247,000.
2019	FSU-CRC First Year Assistant Professor award. As a PI, project: “Diphoton Resonance of New Elementary Particle”. Total award \$20,000.
2014-2016	Grant-in-Aid for JSPS Fellows, Japan (No. 14J00179). Project: “Beyond the Standard Model of Particle Physics at a TeV scale”. The total Award is 4,030,000 JPY (approximately \$34,900).
2012-2014	Grant-in-Aid for JSPS Fellows, Japan (No. 12J09059). Project: “Dark Matter and Electroweak Phase Transition at a TeV scale”. Total award 1,800,000 JPY (approximately \$15,600).

TEACHING

PHY5667 [Quantum Field Theory A]	2024 Fall
PHY5669 [Quantum Field Theory B]	2025 Spring
PHY2049C [General Physics B]	2018 Fall, 2019 Spring
PHZ5355 [High Energy Physics II]	2020 Spring
PHY5346 [Graduate Electrodynamics A]	2020/2022/2023 Fall
PHY5347 [Graduate Electrodynamics B]	2021/2023/2024 Spring

MENTORSHIP

Sabyasachi Chakraborty	Postdoc, '18-'21 (now junior faculty at IIT Kanpur, India).
Tae Hyun Jung	Postdoc, '19-'22 (now junior faculty at IBS, South Korea).
Kare Fridell	Postdoc, '22-'24 (now a postdoc at Charles Univ., Czech).
Mitrajyoti Ghosh	Postdoc, '23-Present.
Vazha Loladze	Ph.D. student (Okui's student), '18-'23 (now postdoc at Oxford).
Shameran Mahmud	Ph.D. student, '19-'25.
Jiabao Wang	Ph.D. student, '22-Present.

SYNERGETIC ACTIVITIES

- Advisor, International Program Evaluation Committee, Yukawa Institute for Theoretical Physics (2025–present).
- Organizer of YITP workshop Organizer, International workshop “The Frontier of Particle Physics: Exploring Muons, Quantum Science and the Cosmos”, Yukawa Institute for Theoretical Physics (2025).
- Organizer, International workshop “Japan-US-Taiwan Particle Physics Workshop”, Taiwan National University (2024).
- Outreach Lectures on Particle Physics for Saturday Morning Physics at Florida State University in 2019, 2021, 2022, 2023, 2024, and 2025.
- Demonstrator, Physics Department Open House at Florida State University in 2023 and 2025.
- Snowmass 2021 activities. Submit a letter of interest “Probing the Dark Sector at Kaon Factories” ([URL](#)) in Rare Processes and Precision Frontier, and as one of four editors organize a contributed paper “New Physics Searches at Kaon and Hyperon Factories” (64 contributors).
- Organizing committee of [Dirac Lectures](#): “Gravitational Waves” (2020), “Quantum Information Science” (2021), “Effective Field Theory” (2023), and “Cosmology Beyond Λ CDM” (2025).
- Organizer of KEK-FSU joint workshop “New Ideas in Particle Physics” ([URL](#)), Nov. 16-17, 2021.
- Lecture for HEP experimentalists at postdoctoral level at Lake Louise Winter Institute 2020, Canada.

REFEREES OF INTERNATIONAL PEER REVIEWED JOURNALS

Physical Review Letters, Physical Review D, Journal of High Energy Physics, Physics Letters B, The European Physical Journal C. *The area includes the theoretical and experimental high energy physics.*

PUBLICATIONS

See [INSPIRE\(INSPIREHEP.NET/AUTHORS/1198400\)](https://inspirehep.net/authors/1198400)

COLLOQUIUM

- 3 “*Fundamental Scales and New Light Particles across Multiple Frontiers*”, University of Alabama, Mar. 19, 2025
- 2 “*Exploring New Light Particles ?at Multiple Frontiers*”, Enrico Fermi Institute, University of Chicago, Oct. 23, 2023
- 1 “*Probing Fundamental Scales with New Light Particles*”, Florida State University, March 23, 2023

CONFERENCE AND WORKSHOP TALKS

- 46 “*High Energy 2-to-4 Vector Boson Scattering to Probe the Higgs Self-couplings*” (plenary), 42nd Regular Meeting of the New Higgs Working Group, Osaka University, Osaka, Japan, Mar. 7, 2026.
- 45 “*Hadronic Injection in BBN: Progress and New Bounds on Heavy QCD Axions*” (plenary), 2nd Hokkaido Workshop on Particle Physics at Crossroads, Hokkaido University, Sapporo, Japan, Mar. 4, 2026.
- 44 “*Big Bang Nucleosynthesis and New Bounds on Heavy QCD Axions*” (plenary), KEK-PH 2026 Winter, KEK, Tsukuba, Japan, Feb. 19, 2026.
- 43 “*Exploring Data for Heavy QCD Axion From Colliders to the Big Bang*” (plenary), Hitoshi Fest, Kavli IPMU, Kashiwa, Japan, Dec. 17, 2024.
- 42 “*New insights on light and heavy axions*” (plenary), Dark World to Swampland 2024: the 9th IBS-IFT Workshop, Institute for Basic Science, Daejeon, Korea, Nov. 6, 2024.
- 41 “*Dark sector search with hadrons — Wish list beyond Belle II Physics Book—*” (plenary), Belle II Physics Week, KEK, Tsukuba, Japan, Oct. 14, 2024.
- 41 “*MeV sterile neutrinos in light of the Cabibbo-angle anomaly*” (plenary), Neutrino Frontiers, Galileo Galilei Institute, Florence, Italy, July 17, 2024.
- 40 “*High Energy Vector Boson Fusion for Anomalous Higgs Sector and Higgs EFT*” (plenary), Aspen workshop Leveraging the Lepton Sector as a Probe for New Physics, Aspen, CO, USA, June 24, 2024.
- 39 “*More Realistic Test on Higgs Effective Field Theory*” (plenary), Higgs as a Probe of New Physics 2023, Osaka University, Osaka, Japan, June 6, 2023.
- 38 “*Cabibbo anomaly highlights sterile neutrinos*” (parallel, invited), 89th Annual Meeting of the APS Southeastern Section, University of Mississippi, Nov 2, 2022.
- 37 “*Light new particles at the kaon experiments*” (plenary), KAON2022, University of Osaka, Sept 16, 2022.
- 36 “*Hidden sectors in kaon decays*” (parallel, invited), Snowmass RPF Spring Meeting, University of Cincinnati, Mar 17, 2022.
- 35 “*Heavy QCD Axion in $b \rightarrow s$ transition*” (plenary), 7th KEK-PH Workshop on "Flavor", KEK (remote), Mar 23, 2021.
- 34 “*Exotica Theory at LHCb*” (plenary), Implications of LHCb measurements and future prospects, CERN (remote), October 2020.
- 33 “*Probing the Dark Sector at Kaon Factories*” (plenary), Snowmass RF town-hall meeting [RF6 topical group] (remote), October 2020.
- 32 “*KOTO vs NA62*” (plenary), Anomalies 2020, IIT Hyderabad, India (remote), September 2020.
- 31 “*Searching for New Physics via Kaon*” (plenary), Progress of Particle Physics, Yukawa Institute of Theoretical Physics, Japan (remote), September 2020
- 30 “*Theory Perspective on KOTO*” (plenary), “Physics Beyond Colliders meets theory” workshop, CERN (remote), June 2020.
- 29 “*BSM Overview*” (lecture, plenary), Lake Louise Winter Institute 2020, Lake Louise, Canada, February 2020.
- 28 “*Axion-like-particles at ATLAS/CMS, LHCb, and Kaon factory*” (plenary), “New Physics with Exotic and Long-Lived Particles” A Joint ICISE-CBPF Workshop, ICISE Conference Center, Quy Nhon, Vietnam, July 2019.

- 26,27 “*Axion-like particles at LHC and Kaon factories*” (plenary), “Explorations Beyond the Standard Model” workshop, University of Oregon, Eugene, USA, May 2018; Seventh Workshop on Theory, Phenomenology and Experiments in Flavour Physics and the future of BSM physics (University of Napoli Federico II), Villa Orlandi, Anacapri, Italy, June 2018
- 25 “*Axion-like particles at Kaon factories*” (plenary), KITP program “High Energy Physics at the Sensitivity Frontier”, Kavli Institute for Theoretical Physics, Santa Barbara, USA, May 2018
- 24 “*New LHC bound on low-mass diphoton resonances*”, Brookhaven Forum 2017, Brookhaven National Laboratory, Brookhaven, USA, October 2017
- 23 “*Light Yukawa couplings*” (plenary), KAON2016, University of Birmingham, Birmingham, UK, September 2016
- 22 “*Footprints of Strong Dynamics*” (plenary), The 3rd NPPI Workshop “The lesson from the first results of Run 2 of the LHC,” Korea University, Seoul, Korea, June 2016
- 21 “*Measuring Higgs coupling to charm quark*” (plenary), Interplay between LHC and Flavor Physics, Nagoya, Japan, March 2016
- 20 “*Footprints of New Strong Dynamics via Anomaly*” (plenary), Beyond the Standard Model 2016 in Okinawa, OIST, Okinawa, Japan, March 2016
- 19 “*High energy flavour physics*”, The Third Annual Large Hadron Collider Physics Conference (LHCP2015), St. Petersburg, Russia, September 2015
- 18 “*Higgs Mass and Compressed Spectrum via Scherk-Schwarz Mechanism*”, LHCP2015, St. Petersburg, Russia, September 2015
- 17 “*Higgs Mass with Scherk-Schwarz Mechanism*” (plenary), Joint KEK Theory Fermilab Theory Workshop, Fermilab, Batavia, USA, August 2015
- 16 “*Constraining the Charm Yukawa and Higgs–quark Universality*”, MG5_aMC@NLO Femto workshop, Kavli IPMU, Kashiwa, Japan, March 2015
- 15 “*Simple study of Higgs-charm coupling by LHC signal strength with b -tagging*”, The 70th annual meeting of JPS (The Physical Society of Japan), Waseda University, Tokyo, Japan, March 2015
- 14 “*Probing Charm Yukawa at the LHC*”, Quantum Universe Icore meeting, Tel Aviv University, Tel Aviv, Israel, March 2015
- 13 “*Higgs Mass in the MSSM and Beyond*” (plenary), ILC Summer Workshop, Sekikane, Japan, July 2014
- 12 “*Dirac NMSSM*” (plenary), Santa Fe 2014 Summer Workshop “LHC After the Higgs”, Santa Fe, USA, July 2014
- 11 “*A Natural Higgs Mass in Supersymmetry from Non-Decoupling Effects*” (plenary), KEK-PH 2013, KEK, Tsukuba, Japan, September 2013
- 10 “*A Natural Higgs Mass in Supersymmetry from Non-Decoupling Effects*” (plenary), Corfu Summer Institute 2013, Corfu, Greece, September 2013
- 9 “*Compact Supersymmetry++*”, Supersymmetry 2013, International Centre for Theoretical Physics, Trieste, Italy, August 2013
- 8 “*Scenario of Compressed BSM*”, LHC vs Beyond the Standard Model, Kyoto University, Kyoto, Japan, March 2013
- 7 “*Compact Supersymmetry and 125 GeV Higgs*”, Supersymmetry 2012, Peking University, Beijing, China, July 2012

- 6 “*Compact Supersymmetry*”, Progress of Particle Physics 2012, Kyoto University, Kyoto, Japan, July 2012
- 5 “*Search for the Degenerate Supersymmetry at the LHC*”, The 67th annual meeting of JPS, Kanseigakuin University, Nishinomiya, Japan, March 2012
- 4 “*Improved discovery of nearly degenerate model: MUED using MT^2 at the LHC*”, The autumn meeting of JPS, Hirosaki University, Hirosaki, Japan, September 2011
- 3 “*Improved discovery of nearly degenerate model: MUED using MT^2 at the LHC*”, 2011 IPMU-YITP Workshop on Monte Carlo Tools for LHC, Kyoto University, Kyoto, Japan, September 2011
- 2 “*Discovery of minimal UED at the LHC*”, The 66th annual meeting of JPS, Niigata University, Niigata, Japan, March 2011
- 1 “*Discovery of minimal UED at the LHC*”, Extra Dimension 2011, Osaka University, Osaka, Japan, January 2011