Yukiya Saito

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Education History

2018 – 2023 **Ph.D., The University of British Columbia, Canada,**
in Computational nuclear astrophysics.
Thesis: *Development of statistical tools for studies of the rapid neutron capture process*
(2023–24 CAP DNP PhD Thesis Prize)
Supervisors: Prof. Reiner Kruecken (Thesis advisor, UBC/TRIUMF/LBNL)
Dr. Iris Dillmann (co-supervisor, TRIUMF)
Dr. Matthew Mumpower (co-supervisor, LANL)

2016 – 2018 **M.Sc., The University of British Columbia, Canada,**
in Experimental nuclear physics.
Thesis: *Decay spectroscopy of neutron-rich ^{129}Cd with the GRIFFIN spectrometer*
Supervisors: Prof. Reiner Kruecken (Thesis advisor, UBC/TRIUMF)
Dr. Iris Dillmann (co-supervisor, TRIUMF)

2012 – 2016 **B.Sc., The University of Tokyo, Japan**, in Physics.

Research Position History

2023 – **NP3M Fellow**
Department of Physics & Astronomy
University of Tennessee, Knoxville, USA,
University of Notre Dame, USA, and
Michigan State University/FRIB, USA
Project: Development and application of statistical methods for r-process studies and DFT-based nuclear data.
Advisors: Prof. Rebecca Surman (Notre Dame)
Prof. Witold Nazarewicz (MSU/FRIB)
Prof. Andrew W. Steiner (UTK, NP3M Director)

2023 – 2023 **Postdoctoral Research Fellow**
ALPHA Canada Group, TRIUMF, Canada
Project: Anti-hydrogen annihilation vertex position reconstruction for the ALPHA-g time projection chamber using deep learning.
Advisors: Dr. Makoto Fujiwara (TRIUMF)
Dr. Wojciech Fedorko (TRIUMF)

2016 – 2023 **Graduate Research Assistant**
Exotic Decay Spectroscopy Group, TRIUMF, Canada

Research Position History (continued)

2016 – 2016 **Research Assistant**
Radioactive Isotope Physics Laboratory,
RIKEN Nishina Center for Accelerator-Based Science, Japan

Teaching History

2024 **Substitute Lecture**
PHYS 10411 - Physics A: Mechanics, Angular Momentum
Department of Physics and Astronomy,
University of Notre Dame

2016 – 2023 **Teaching Assistant,**
PHYS157 & 158 (Introductory Engineering Physics),
PHYS159 (Introductory Physics Laboratory For Engineers)
PHYS219 (Intermediate Experimental Physics I – Electronics)
PHYS319 (Electronics Laboratory – Microprocessors)
Department of Physics and Astronomy,
The University of British Columbia, Canada

2018 – 2022 **Head TA Coordinator,**
Teaching Assistant Professional Development Committee,
Department of Physics and Astronomy,
The University of British Columbia, Canada

2017 – 2019 **Head Teaching Assistant,**
PHYS157 & 158 (Introductory Engineering Physics),
Department of Physics and Astronomy,
The University of British Columbia, Canada

Mentoring Experience

Graduate students

2023 – 2025 **Ashabari Majundar** (U. Notre Dame)
Topic: Effect of nuclear data on the neutron capture rates in the r-process nucleosynthesis
Outcome: Successfull completion of her Ph.D. program.

2023 – **Pranav Nalamwar** (U. Notre Dame)
Topic: Development of computational methods for nuclear heating in the r-process calculations (ongoing)

Undergraduate students

2025 **Pranav Agarwal** (Michigan State U./FRIB)
Topic: Investigation of the nuclear structural origin of the A 105 r-process abundance peak (ongoing)

Mentoring Experience (continued)

2023 **Ashley Ferreira** (U. Waterloo/TRIUMF)

Topic: Anti-hydrogen annihilation vertex position reconstruction for the ALPHA-g time projection chamber using deep learning

Outcome: Student won the 1st place at the Canadian Astroparticle Summer Student Talk Competition and won Richard E. Azuma Undergraduate Summer Fellowship. Research output accepted to JHEP.

2021 **James Ross** (U. British Columbia)

Topic: Theoretical study of photon-beam-driven nuclear trans- mutation of long-lived radioactive waste

Outcome: Oral presentation by the student at the UBC Multidisciplinary Undergraduate Research Conference titled "Towards Photon-Beam-Driven Nuclear Trans- mutation of Long-Lived Radioactive Waste."

Paul Virally (U. Waterloo/TRIUMF)

Topic: Implementation of an astrophysical nuclear reaction network calculation in the julia programming language

Outcome: Astrophysical nuclear reaction network calculation code NuclearReactionNetwork.jl (available upon request)

Research Funding and Resource Allocations

Research Funding

2016 – 2018 **NSERC CREATE IsoSiM Stipend**

2023 – 2026 **NSF Research Hub: Nuclear Physics from Multi-Messenger Mergers (NP3M) Fellowship**

Resource Allocations

2025 – **US National Science Foundation ACCESS Program**
PHYS250120 Large-Scale Calculation of Beta-Delayed Neutron Emission Probabilities and Implications for r-process nucleosysnthesis 750k credits

Honors and Awards

NP3M

2025 **FRIB Theory Alliance Fellow Shortlist**

The University of British Columbia/TRIUMF

2024 **2023–24 CAP DNP PhD Thesis Prize** C$1000

2016 – 2023 **International Tuition Award** C$3200/year

2020 – 2022 **President's Academic Excellence Initiative PhD Award** C$1000/year

2022 **IReNA Travel Support** $1350

2018 – 2022 **Faculty of Science PhD Tuition Award** ~C$6000/year

Honors and Awards (continued)

2018 **WNPPC Student Travel Award** C$500

The University of Tokyo

2015 **Strategic Partnership between Princeton University and the University of Tokyo Scholarship,** for research exchange at the Department of Astrophysical Sciences, Princeton University ∼¥350,000

2014 **School of Science Visit Abroad Program Scholarship,** for attending Summer Session 2014 at UC Berkeley ∼¥350,000 + Tuition

2013 **Go Global 2013 S-Short Study Abroad Scholarship,** for attending a summer school at National Taiwan University ∼¥100,000

Community Services

Committee

2018 – 2022 **Head TA Coordinator, Teaching Assistant Professional Development program committee, UBC Physics and Astronomy**

2025 – **Seminar and Research Discussion Committee, FRIB**

Referee

- **Journal of Physics G: Nuclear and Particle Physics**
- **Machine Learning: Science and Technology**
- **Nature Communications Physics**

Skills

Scientific Computing — Nuclear reaction network calculation • Nuclear DFT • High performance computing • Statistical sensitivity analysis • Bayesian modelling with probabilistic programming languages • Markov chain Monte Carlo methods • Uncertainty quantification • Machine Learning • Data analysis with ROOT

Programming Languages — Python • Julia • C++ • Shell script • LaTeX• Fortran

Human Languages — English and Japanese (Strong reading, writing and speaking competencies), Mandarin (Elementary).

Presentations

Invited

Dec 2025 **FRIB Theory Alliance Fellow Candidate Seminar**, Facility for Rare Isotope Beams
"*From Nuclear DFT to the Heaviest Elements: Toward Uncertainty-Quantified Nuclear Physics Input for the Astrophysical Rapid Neutron Capture Process*"

Sep 2025 **FRIB-TA Topical Program: Future directions in nuclear beta decay at FRIB**, Facility for Rare Isotope Beams
"*Effect of β-decay on r-process dynamics*"

Presentations (continued)

Jun 2025 **2025 CAP Congress**, Saskatoon, Canada
"*Statistical tools for the r-process nucleosynthesis studies*"

Mar 2025 **International symposium: TRIP Usecase: Nuclear Transmutation**, RIKEN, Japan
"*Statistical tools for the r-process nucleosynthesis studies*"

Jul 2024 **2024 BAND Collaboration Retreat**, Ohio University
"*Uncertainty quantification of nuclear mass models using ensemble Bayesian model averaging*"

Apr 2024 **INPP Seminar**, Ohio University

Feb 2024 **Notre Dame Nuclear Seminar**, University of Notre Dame

Jun 2020 **CAP Congress**, Canceled

Contributed

Dec 2025 **COMEX8**, Tallahassee, FL
"*Effect of global β-decay predictions on the r-process dynamics*"

Mar 2025 **2025 APS Global Summit**, Anaheim, CA
"*Effect of finite-temperature β-decay on the r-process nucleosynthesis*"

Oct 2024 **2024 APS DNP Fall Meeting**, Boston, MA
"*Bayesian uncertainty quantification of nuclear mass models for astrophysical rapid neutron capture process*"

Jun 2024 **2024 CeNAM Frontiers in Nuclear Astrophysics Meeting**, University of Notre Dame
"*Uncertainty quantification of nuclear mass models using ensemble Bayesian model averaging*"

Sep 2022 **Nuclear Physics in Astrophysics – X**, CERN
"*Variance-based sensitivity analysis in the r-process nucleosynthesis studies and a scalable extension*"

Jun 2021 **CAP Congress**, online
"*Statistical studies of the r-process network calculations*"

Sep 2019 **International Nuclear Physics Conference**, Glasgow, UK
"*Decay Spectroscopy of Neutron-Rich Cd Around the $N = 82$ Shell Closure with GRIFFIN*"

Oct 2018 **APS-JPS DNP Joint Meeting 2018**, Hawaii, USA
"*Decay Spectroscopy of ^{129}Cd with the GRIFFIN Spectrometer*"

Feb 2018 **Winter Nuclear and Particle Physics Conference**, Mont Tremblant, Canada
"*Decay Spectroscopy of ^{129}Cd with the GRIFFIN Spectrometer*"

Jun 2017 **CAP Congress**, Kingston, Canada
"*Decay Spectroscopy of ^{129}Cd with the GRIFFIN Spectrometer*"

Posters

May 2022 **JINA-Frontiers Meeting**, South Bend, USA
"*New tool for sensitivity analysis in the r-process — a case study in the rare-earth peak region*"