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Education and Qualifications:

Ph.D in Physics

Tokyo Institute of Technology, Tokyo, Japan.

Dissertation title: "Study of nuclear spin maser for EDM measurements"

March 2000

M.S. in Physics

Tokyo Institute of Technology, Tokyo, Japan.

March 1997

B.S. in Physics

Tokyo Institute of Technology, Tokyo, Japan.

March 1995

Research:

Associate Professor

Research Institute for Interdisciplinary Science, Okayama University, Japan

- Spectroscopy of low-energy nuclear clock transition of Thorium-229
Controllable isomer production of ^{229}Th with nuclear resonant scattering
- Manipulation of atomic coherence for fundamental physics research
Development of neutrino spectroscopic scheme with atomic coherence

2011 - present

Research Scientist

Applied Nuclear Physics Lab., RIKEN, Japan

- Search for violation of Time-reversal symmetry through electric dipole moment
Development of nuclear spin maser for EDM search experiments
- Nuclear structure studies with polarized unstable nuclei
Electromagnetic moment measurements of unstable nuclei by β -NMR

2003 - 2011

Publications [I]; Thorium-229 studies

- T. Masuda, A. Yoshimi, A. Fujieda, H. Fujimoto, H. Haba, H. Hara, T. Hiraki, H. Kaino¹, Y. Kasamatsu, S. Kitao, K. Konashi, Y. Miyamoto¹, K. Okai, S. Okubo, N. Sasao, M. Seto, T. Schumm, Y. Shigekawa, K. Suzuki, S. Stellmer, K. Tamasaku, S. Uetake, M. Watanabe, T. Watanabe, Y. Yasuda, A. Yamaguchi, Y. Yoda, T. Yokokita, M. Yoshimura, K. Yoshimura: "X-ray pumping of the ^{229}Th nuclear clock isomer", *Nature* **573**, 238-242 (2019).
- T. Masuda, T. Hiraki, H. Kaino, S. Kishimoto, Y. Miyamoto, K. Okai, S. Okubo, R. Ozaki, N. Sasao, K. Suzuki, S. Uetake, A. Yoshimi, K. Yoshimura: "Energy response of X-rays under high flux conditions using a thin APD for the energy range of 6–33 keV", *Nucl. Instrum. Methods Phys. Res. A* **913**, 72 (2019).
- A. Yoshimi, H. Hara, T. Hiraki, Y. Kasamatsu, S. Kitao, Y. Kobayashi, K. Konashi, R. Masuda, T. Masuda, Y. Miyamoto, K. Okai, S. Okubo, R. Ozaki, N. Sasao, O. Sato, M. Seto, T. Schumm, Y. Shigekawa, S. Stellmer, K. Suzuki, S. Uetake, M. Watanabe, A. Yamaguchi, Y. Yasuda, Y. Yoda, K. Yoshimura, and M. Yoshimura: "Nuclear resonant scattering experiment with fast time

response: Photonuclear excitation of ^{201}Hg ", Phys. Rev. C **97**, 024607 (2018).

- T. Masuda, T. Watanabe, K. Beeks, H. Fujimoto, T. Hiraki, H. Kaino, S. Kitao, Y. Miyamoto, K. Okai, N. Sasao, M. Seto, T. Schumm, Y. Shigekawa, K. Tamasaku, S. Uetake, A. Yamaguchi, Y. Yoda, A. Yoshimi, K. Yoshimura, "Absolute X-ray energy measurement using a high-accuracy angle encoder", J. Synchrotron Radiation **28**(1) 111 - 119 (2021).

Publications [III]; Atomic coherence studies

- T. Hiraki, H. Hara, Y. Miyamoto, K. Imamura, T. Masuda, N. Sasao, S. Uetake, A. Yoshimi, K. Yoshimura, M. Yoshimura: "Coherent two-photon emission from hydrogen molecules excited by counter-propagating laser pulses", J. Phys. B **52**, 045401 (2019).
- Y. Miyamoto, H. Hara, T. Masuda, N. Sasao, M. Tanaka, S. Uetake, A. Yoshimi, K. Yoshimura and M. Yoshimura: "Externally triggered coherent two-photon emission from hydrogen molecules", Prog. Theo. Exp. Phys. (2015) 081C01. (DOI: 10.1093/ptep/ptv103)

Publications [III]; EDM search

- T. Sato, Y. Ichikawa, S. Kojima, C. Funayama, S. Tanaka, T. Inoue, A. Uchiyama, A. Gladkov, A. Takamine, Y. Sakamoto, Y. Ohtomo, C. Hirao, M. Chikamori, E. Hikota, T. Suzuki, M. Tsuchiya, T. Furukawa, A. Yoshimi, C.P. Bidinosti, T. Ino, H. Ueno, Y. Matsuo, T. Fukuyama, N. Yoshinaga, Y. Sakemi, K. Asahi: "Development of co-located ^{129}Xe and ^{131}Xe nuclear spin masers with external feedback scheme", Phys. Lett. A **382** (2018) 588 – 594.
- A. Yoshimi, T. Inoue, T. Furukawa, T. Nanao, K. Suzuki, M. Chikamori, M. Tsuchiya, H. Hayashi, M. Uchida, N. Hatakeyama, S. Kagami, Y. Ichikawa, H. Miyatake and K. Asahi: "Low-frequency nuclear spin oscillator of ^{129}Xe with optical spin detection", Phys. Lett. A **376** (2012) 1924-1929.

Publications [IV]; Nuclear structure studies

- H. Heylen, M. De Rydt, G. Neyens, M. L. Bissell, L. Caceres, R. Chevrier, J. M. Daugas, Y. Ichikawa, Y. Ishibashi, O. Kamalou, T. J. Mertzimekis, P. Morel, J. Papuga, A. Poves, M. M. Rajabali, C. Stödel, J. C. Thomas, H. Ueno, Y. Utsuno, N. Yoshida, and A. Yoshimi: "High-precision quadrupole moment reveals significant intruder component in ^{33}Al ground state", Phys. Rev. C **94** (2016) 034312.
- Y. Ichikawa, H. Ueno, Y. Ishii, T. Furukawa, A. Yoshimi, D. Kameda, H. Watanabe, N. Aoi, K. Asahi, D.L. Balabanski, R. Chevrier, J.-M. Daugas, N. Fukuda, G. Georgiev, H. Hayashi, H. Iijima, N. Inabe, T. Inoue, M. Ishihara, T. Kubo, T. Nanao, T. Ohnishi, K. Suzuki, M. Tsuchiya, H. Takeda and M. M. Rajabali: "Production of spin-controlled rare isotope beams", Nature Physics **8** (2012) 918-922.

Conference presentations:

- "Towards spectroscopy of ^{229}Th nuclear isomeric transition using nuclear resonant scattering at SPring-8", Expert Workshop on Nuclear Resonant Scattering of Synchrotron Radiation, On-line, Jan. 12, 2021.
- "Towards the spectroscopy of ^{229}Th nuclear clock transition using Nuclear Resonant Scattering", DICP Workshop on Mossbauer Spectroscopy Related to Synchrotron Radiation and Free Electron Laser, Dalian, China, Aug. 31, 2019.

- “Production of the ^{229}Th nuclear clock isomer with brilliant X-ray”, International Nuclear Conference 2019 (INPC2019), Glasgow, UK, July 29-Aug 2, 2019.
- “Nuclear resonant scattering of ^{229}Th for observation of radiative isomeric transition”, WE-Heraeus-Seminar on “Novel optical clocks in atoms and nuclei”, Bad Honnef, Germany, July 9-12, 2018.
- “Neutrino spectroscopy with atoms and laser; toward detection of relic neutrino”, International Conference on Light driven Nuclear-Particle physics and Cosmology 2017 (LNPC2017), Yokohama, Japan, April 19-21, 2017 (invited).
- “Towards neutrino mass spectroscopy using atoms: experimental status”, the 4th Users Meeting of the Spanish Pulsed Lasers Center, Salamanca (Spain), December 2, 2014. (Invited)
- "Nuclear electromagnetic moments of neutron-rich Al isotopes", Nuclear Structure 2008 (NS2008) conference, Michigan, USA, June, 2008.
- “Optical coupling nuclear spin maser under highly stabilized low static field”, The XIV International Conference on Hyperfine Interactions, Iguazu, Brazil, August, 2007.
- “Optical-coupling nuclear spin maser and search for an atomic EDM of ^{129}Xe ”, International Nuclear Physics Conference, Tokyo, Japan, June, 2007.

Honors and Awards:

- The 18th Outstanding Paper Award of the Physical Society of Japan:
 “Identification of 45 New Neutron-Rich Isotopes Produced by In-Flight Fission of a ^{238}U Beam at 345 MeV/nucleon”, J. Phys. Soc. Jpn. **79**, No.7, 073201 (2010).
 T. Ohnishi, T. Kubo, K. Kusaka, A. Yoshida, K. Yoshida, M. Ohtake, N. Fukuda, H. Takeda, D. Kameda, K. Tanaka, N. Inabe, Y. Yanagisawa, Y. Gono, H. Watanabe, H. Otsu, H. Baba, T. Ichihara, Y. Yamaguchi, M. Takechi, S. Nishimura, H. Ueno, A. Yoshimi, H. Sakurai, T. Motobayashi, T. Nakao, Y. Mizoi, M. Matsushita, K. Ieki, N. Kobayashi, K. Tanaka, Y. Kawada, N. Tanaka, S. Deguchi, Y. Satou, Y. Kondo, T. Nakamura, K. Yoshinaga, C. Ishii, H. Yoshii, Y. Miyashita, N. Uematsu, Y. Shiraki, T. Sumikama, J. Chiba, E. Ideguchi, A. Saito, T. Yamaguchi, I. Hachiuma, T. Suzuki, T. Moriguchi, A. Ozawa, T. Ohtsubo, M. A. Famiano, H. Geissel, A.S. Nettleton, O.B. Tarasov, D.P. Bazin, B.M. Sherrill, S.L. Manikonda, and J.A. Nolen.

Teaching:

Associate Professor

2011 – present

Research Institute for Interdisciplinary Science, Okayama University, Japan

- Mechanics
- Computational Physics
- Physics Experiments
- Particle Physics and Cosmology
- Quantum Optics (Master's Course)
- Fundamental Atomic Physics (Doctor's Course)