



**Masami Yasuda**

Group Leader of Time Standards Group, Research Institute for Physical Measurement, National Metrology Institute of Japan (NMIJ), National Institute of Advanced Industrial Science and Technology (AIST) in Tsukuba (Japan)

*Education and Training*

1993 B. S. Department of Applied Physics, the University of Tokyo

1995 M. S. Department of Applied Physics, the University of Tokyo

1998 PhD. Department of Applied Physics, the University of Tokyo

*Thesis theme: Hanbury Brown-Twiss effect on a laser-cooled metastable neon atomic beam.*

*Work experience*

1/4/1998-30/9/1999

JSPS Post-Doctoral Fellow at Physics Department, Yale University in New Haven (USA)

1/10/1999-15/3/2005

Research Associate;

Engineering Research Institute, Faculty of Engineering, the University of Tokyo (Japan)

16/3/2005-Present

Time Standards Group, Research Institute for Physical Measurement, National Metrology Institute of Japan (NMIJ), National Institute of Advanced Industrial Science and Technology (AIST) in Tsukuba (Japan)

*Scientific Activity*

He is currently a Group Leader of the Time Standards Group. His current research interests include optical frequency standards, focusing on an Yb optical lattice clock.

*Project coordination and participation*

JST CREST, FIRST, JSPS KAKENHI, JST MIRAI,

*Organizational skills and competences*

Membership: JPS, JSAP, IEEJ, SPSJ editorial committee

Metre convention: CCTF delegate, CCL expert

EFTF-IFCS scientific committee, URSI-GASS convener

*Selected publications*

1) T. Kobayashi, D. Akamatsu, Y. Hisai, T. Tanabe, H. Inaba, T. Suzuyama, F.-L. Hong, K. Hosaka, and M. Yasuda, "Uncertainty evaluation of an  $^{171}\text{Yb}$  optical lattice clock at NMIJ", IEEE Trans. Ultrason. Ferroelectr. Freq. Control. 65(12), 2449 (2018).

2) D. Akamatsu, T. Kobayashi, Y. Hisai, T. Tanabe, K. Hosaka, M. Yasuda, and F.-L. Hong, "Dual-Mode operation of an optical lattice clock using strontium and ytterbium atoms", IEEE Trans. Ultrason. Ferroelectr. Freq. Control. 65(6), 1069 (2018).

3) T. Tanabe, D. Akamatsu, H. Inaba, S. Okubo, T. Kobayashi, M. Yasuda, K. Hosaka, and F.-L. Hong, "A frequency-stabilized light source at 399 nm using an Yb hollow-cathode lamp", Jpn. J. Appl. Phys. 57, 062501-1~6 (2018).

- 4) M. Yasuda, T. Tanabe, T. Kobayashi, D. Akamatsu, T. Sato, and A. Hatakeyama, “Laser-Controlled Cold Ytterbium Atom Source for Transportable Optical Clocks”, *J. Phys. Soc. Jpn.* **86**, 125001-1~2 (2017).
- 5) T. Kobayashi, D. Akamatsu, K. Hosaka, H. Inaba, S. Okubo, T. Tanabe, M. Yasuda, A. Onae, and F.-L. Hong, “Absolute frequency measurement and hyperfine structures of the molecular iodine transitions at 578 nm”, *J. Opt. Soc. Am. B* **33**, 725 (2016).
- 6) T. Kobayashi, D. Akamatsu, Y. Nishida, T. Tanabe, M. Yasuda, F.-L. Hong, and K. Hosaka, “Second harmonic generation at 399 nm resonant on the  $^1S_0$ - $^1P_1$  transition in ytterbium using a periodically poled LiNbNO<sub>3</sub> waveguide”, *Opt. Express* **24**, 12142 (2016).
- 7) T. Kobayashi, D. Akamatsu, K. Hosaka, H. Inaba, S. Okubo, T. Tanabe, M. Yasuda, A. Onae, and F.-L. Hong, “Compact iodine-stabilized laser operating at 531 nm with stability at the  $10^{-12}$  level and using a coin-sized laser module”, *Opt. Express* **23**, 20749 (2015).
- 8) T. Tanabe, D. Akamatsu, T. Kobayashi, A. Takamizawa, S. Yanagimachi, T. Suzuyama, H. Inaba, S. Okubo, M. Yasuda, F.-L. Hong, A. Onae, and K. Hosaka, “Improved Frequency Measurement of the  $^1S_0$ - $^3P_0$  Clock Transition in  $^{87}\text{Sr}$  Using a Cs Fountain Clock as a Transfer Oscillator”, *J. Phys. Soc. Jpn.* **84**, 115002 (2015).
- 9) D. Akamatsu, M. Yasuda, H. Inaba, K. Hosaka, T. Tanabe, A. Onae and F.-L. Hong, “Frequency ratio measurement of  $^{171}\text{Yb}$  and  $^{87}\text{Sr}$  optical lattice clocks”, *Opt. Express* **22**, 7898 (2014).
- 10) D. Akamatsu, H. Inaba, K. Hosaka, M. Yasuda, A. Onae, T. Suzuyama, M. Amemiya, and F.-L. Hong, “Spectroscopy and frequency measurement of the  $^{87}\text{Sr}$  clock transition by laser linewidth transfer using an optical frequency comb”, *Appl. Phys. Express* **7**, 012401 (2014).
- 11) H. Inaba, K. Hosaka, M. Yasuda, Y. Nakajima, K. Iwakuni, D. Akamatsu, S. Okubo, T. Kohno, A. Onae, F.-L. Hong, “Spectroscopy of  $^{171}\text{Yb}$  in an lattice based on laser linewidth transfer using a narrow linewidth frequency comb”, *Opt. Express* **21**, 7891 (2013)
- 12) K. Hosaka, H. Inaba, D. Akamatsu, M. Yasuda, J. Sugawara, A. Onae, and F.-L. Hong, “A Fabry-Pérot Etalon with an Ultralow Expansion Ceramic Spacer”, *Jpn. J. Appl. Phys.* **52**, 032402 (2013).
- 13) M. Yasuda, H. Inaba, T. Kohno, T. Tanabe, Y. Nakajima, K. Hosaka, D. Akamatsu, A. Onae, T. Suzuyama, M. Amemiya, and F.-L. Hong: “Improved Absolute Frequency Measurement of the  $^{171}\text{Yb}$  Optical Lattice Clock towards a Candidate for the Redefinition of the Second”, *Appl. Phys. Express* **5**, 102401 (2012).
- 14) D. Akamatsu, Y. Nakajima, H. Inaba, K. Hosaka, M. Yasuda, A. Onae, F.-L. Hong, “Narrow linewidth laser system realized by linewidth transfer using a fiber-based frequency comb for the magneto-optical trapping of strontium”, *Opt. Express* **20**, 16010 (2012)
- 15) M. Yasuda, T. Kohno, H. Inaba, Y. Nakajima, K. Hosaka, A. Onae, and F.-L. Hong: “Fiber-comb-stabilized light source at 556 nm for magneto-optical trapping of ytterbium”, *J. Opt. Soc. Am. B*, **7**, 1388 (2010).
- 16) Y. Nakajima, H. Inaba, K. Hosaka, K. Minoshima, A. Onae, M. Yasuda, T. Kohno, S. Kawato, T. Kobayashi, T. Katsuyama, and F.-L. Hong, “A multi-branch, fiber-based frequency comb with milihertz-level relative linewidths using an intra-cavity electro-optic modulator”, *Opt. Express* **18** 1667 (2010).

- 17) T. Kohno, M. Yasuda, K. Hosaka, H. Inaba, Y. Nakajima and F.-L. Hong, “One-Dimensional Optical Lattice Clock with a Fermionic  $^{171}\text{Yb}$  Isotope”, *Appl. Phys. Express* **2**, 072501 (2009).
- 18) M. Yasuda, T. Kishimoto, M. Takamoto, and H. Katori, “Photoassociation spectroscopy of  $^{88}\text{Sr}$ : reconstruction of the wave function near the last node,” *Phys. Rev. A* **73**, 011403R (2006).
- 19) M. Yasuda and H. Katori, “Lifetime Measurement of the  $^3\text{P}_2$  Metastable State of Strontium Atoms,” *Phys. Rev. Lett.* **92**, 153004 (2004).
- 20) C. Orzel, A. K. Tuchman, M. L. Fenselau, M. Yasuda and M. A. Kasevich, “Squeezed states in a Bose-Einstein condensate”, *Science* **291**, 2386 (2001).
- 21) M. Yasuda and F. Shimizu, “Observation of Two-Atom Correlation of an Ultracold Neon Atomic Beam”, *Phys. Rev. Lett.* **77**, 3090 (1996).
- 22) M. Morinaga, M. Yasuda, T. Kishimoto, F. Shimizu, J. Fujita, and S. Matsui, “Holographic Manipulation of a Cold Atomic Beam”, *Phys. Rev. Lett.* **77**, 802 (1996).
- 23) J. Fujita, M. Morinaga, T. Kishimoto, M. Yasuda, S. Matsui, and F. Shimizu, “Manipulation of an atomic beam by a computer-generated hologram”, *Nature* **389**, 691 (1996).