


PERSONAL INFORMATION

Keita Seto



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POSITION

Research Scientist (CS)

WORK EXPERIENCE

Jul 2016–Present

Research Scientist (CS)

IFIN-HH

Extreme Light Infrastructure - Nuclear Physics (ELI-NP)/
Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH)

- Performing scientific research of high-intensity field physics at "Research Activity 5" in ELI-NP project
 - The theoretical works: investigations of "radiation reaction" from classical to quantum regime
 - Numerical simulations related to above topics
 - Designing experiments of related topics
- Taking part in ELI-NP meetings, scientific events and research activities

Jul 2014–Jul 2016

Postdoctoral Research Assistant

IFIN-HH

Extreme Light Infrastructure - Nuclear Physics (ELI-NP)/
Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH)

- Performing scientific research of high-intensity field physics at "Research Activity 5" in ELI-NP project
 - The theoretical works: investigations of "radiation reaction" based on classical descriptions
 - Numerical simulations related to above topics
 - Writing a part of "Technical Design Report: RA5-TDR"
 - Editing RA5-TDR
- Taking part in ELI-NP meetings, scientific events and research activities

Mar 2013–Jul 2014

Postdoctoral Research Assistant

Osaka University (Japan)

Institute of Laser Engineering (ILE), Osaka University

- Assisting the collaboration between ILE-other institutes/universities/companies

EDUCATION AND TRAINING

Apr 2010–Mar 2013

Ph.D. (Engineering)

Graduate School of Engineering, Osaka University

- Division of Electrical, Electronic and Information Engineering
 - Adv. electromagnetic energy course: plasma science (physics and engineering)
 - Performing researches at the theory group of ILE, Osaka Univ.
- Laser-plasma interactions, especially radiation reaction

Title of Ph.D. thesis:

"Theoretical study of radiation reaction in ultra-relativistic laser - electron interactions"

[Japanese title: 超相対論レーザー電子相互作用における放射の反作用の理論研究]

Apr 2008–Mar 2010

Master (Engineering)

Graduate School of Engineering, Osaka University

Division of Electrical, Electronic and Information Engineering

- Adv. electromagnetic energy course : plasma science (physics and engineering)
- Performing researches at the theory group of ILE, Osaka Univ.

Apr 2004–Mar 2008

Bachelor (Engineering)

School of Engineering, University of Hyogo (Japan)

Department of Electrical Engineering and Computer Science

- Major: Energy Engineering - Plasma Physics and Engineering
- Basics: from electric circuits to power transport system, automatic control system, solid state physics, analogue/digital communications & etc.

PERSONAL SKILLS

Mother tongue(s)

Japanese

Communication skills

Making new collaborations with several institutes and universities

Job-related skills

Mathematical/theoretical modelling in physics

- Physics: classical physics, plasma physics, special/general theory of relativity, quantum physics including quantum field theory
- Mathematics: Riemannian geometry, function analysis (incl. theory of Hilbert space + Fock space), modern theory of probability including stochastic processes

ADDITIONAL INFORMATION

Publications

- Keita Seto, "Stochastic mechanics for ponderomotive effect of a spin-less electron interacting with a high-intensity plane wave laser field," Plasma Res. Express 1, 025011 (2019).
- Jian F. Ong, Keita Seto, Andrei C. Berceanu, Soichiro Aogaki, and Liviu Neagu, "Feasibility studies of an all-optical γ -ray blaster using a 1 PW laser pulse," Plasma Phys. Control. Fusion **61** 084009 (2019).
- Sydney Gales, Kazuo A. Tanaka, Dimiter L. Balabanski, Florin Negoita, Dan Stutman, Ovidiu

Tesileanu, Calin A. Ur, Daniel Ursescu, Ionel Andrei, Stefan Ataman, Mihail O. Cernaianu, Loris D'Alessi, Ioan Dancus, Bogdan Diaconescu, Nikolay Djourellov, Dan Filipescu, Petru Ghenuche, Dan G. Ghita, Catalin Matei, Keita Seto, Ming Zeng, and Nikolae V. Zamfir, "The extreme light infrastructure—nuclear physics (ELI-NP) facility: new horizons in physics with 10 PW ultra-intense lasers and 20 MeV brilliant gamma beams", Rep. Prog. Phys. 81, 094301 (2018).

- Keita SETO, "Radiation Reaction - from Classical Physics to Quantum Fields", J. Plasma Fusion Res. (プラズマ・核融合学会誌) 93, 10-17, (2017). [Japanese]
- Kensuke HOMMA, Ovidiu TESILEANU, Loris D'ALESSI, Takashi HASEBE, Anton ILBERTON, Toseo MORITAKA, Yoshihide NAKAMIYA, Keita SETO, and Hiroaki UTSUNOMIYA, "COMBINED LASER GAMMA EXPERIMENTS AT ELI-NP", Rom. Rep. Phys. 68, Supplement, S233-S274, (2016).
- Keita SETO, "Radiation Reaction in High-Intensity Fields", Prog. Theor. Exp. Phys. 2015 103A01 (2015).
- Keita SETO, "Radiation Reaction in Quantum Vacuum", Prog. Theor. Exp. Phys. 2015 023A01 (2015).
- Keita SETO, Sen ZHANG, James KOGA, Hideo NAGATOMO, Mitsuo NAKAI and Kunioki MIMA, "Stabilization of Radiation Reaction with Vacuum Polarization", Prog. Theor. Exp. Phys. 2014, 043A01 (2014).
- Keita SETO, James KOGA and Sen ZHANG, "Possibility of Radiation Reaction Observation under Ultraintense Laser", The Review of Laser Engineering (レーザー研究) 42, 2, 174 (2014).
- Keita SETO, Hideo NAGATOMO, James KOGA and Kunioki MIMA, "Radiation Reaction in ultrarelativistic laser-spinning electron interactions", Prog. Theor. Exp. Phys. 2013, 053A01 (2013).
- Keita SETO, Hideo NAGATOMO, James KOGA and Kunioki MIMA, "Theoretical Study of Ultra-Relativistic Laser Electron Interaction with Radiation Reaction by Quantum Description", Plasma Fusion Res. 7, 2404010 (2012).
- Keita SETO, Hideo NAGATOMO, James KOGA, and Kunioki MIMA, "Equation of motion with radiation reaction in ultrarelativistic laser-electron interactions", Phys. Plasmas 18, 123101 (2011), and also selected in Volume 11, Issue 1 of Virtual Journal of Ultrafast Science (January 2012).
- Keita SETO, Hideo NAGATOMO and Kunioki MIMA, "Theoretical Study of Ultra-Relativistic Laser Electron Interaction in the Strong Radiation Reaction Regime", Plasma and Fusion Research Volume 6, 2404099 (2011).

- "9th Kondo award 2015, Osaka University"
at the Symposium of Institute of Laser Engineering (ILE) 2015 [Osaka University, April 8th, 2015] <http://www.ile.osaka-u.ac.jp/collab/ilesymposium.html>

- "Best presentation" prize for young researcher
at 27th Annual Meeting of The Japan Society of Plasma Science and Nuclear Fusion Research [The Japan Society of Plasma Science and Nuclear Fusion Research, December 3rd, 2010] <http://www.jspf.or.jp/award/wakate.html>