

The Physical Society of Japan: Award for the Encouragement of Young Physicists

Every year the Physical Society of Japan presents the Award for the Encouragement of Young Physicists for young researchers who have made outstanding achievements in their early research careers. The winners of this year were recently decided by the board meeting of JPS based on the selection of committees established in 19 divisions of the Society. The maximum number of the winners from each division has been determined based on the number of talks at the annual assemblies in the past three years. All the winners are to give an award lecture at the next general assembly of the Society scheduled in March 2015. Here is the list of the winners and their research topics based on the divisions from which they have been nominated.

• Theoretical Particle Physics:

Takashi Toma (LPT Orsay)

"Study of dark matter particle explaining the gamma ray excess from the Galactic center"

• Experimental Particle Physics:

Akira Miyazaki (CERN, European Organization for Nuclear Research)

"Direct Measurement of the Hyperfine Structure Interval of Positronium Using High Power Millimeter Wave Technology"

Yohei Yamaguchi (Department of Physics, Graduate School of Science, Osaka University)

"Observation of Higgs Boson with Di-photon Events in Proton-Proton Collisions"

Thiago Junqueira De Castro Bezerra (Research Center For Neutrino Science, Tohoku University)

"Improvement of θ_{13} Measurement in the Double Chooz Experiment

and the First Effective Δm_{31}^2 Measurement from Reactor Neutrino Oscillation at Different Baselines"

• Theoretical Nuclear Physics:

Yukinao Akamatsu (Kobayashi-Maskawa Institute for the Origin of Particles and the Universe (KMI), Nagoya University)

"Theory of Open Quantum System for Heavy Quarkonia in Thermal Medium"

Shuichiro Ebata (Meme Media Laboratory, Hokkaido University)

"Developments of Canonical-basis Time-dependent Hartree-Fock-Bogoliubov Theory"

Daisuke Satow (The European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*))

"Development of Novel Perturbation Theory and Establishment of Ultrasoft Fermionic Modes at High Temperature"

• Experimental Nuclear Physics:

Hooi Jin ONG (Research Center for Nuclear Physics, Osaka University)

"Probing effect of tensor interactions in ^{16}O via (p, d) reaction"

Aiko TAKAMINE (Aoyama Gakuin University College of Science and Engineering)

"Hyperfine Structure Constant of the Neutron Halo Nucleus $^{11}\text{Be}^{+}$ "

• Cosmic Ray and Astrophysics:

Teruaki Suyama (RESCEU, Graduate School of Science, The University of Tokyo)

"Discovery of a method to discriminate generation mechanisms for primordial density fluctuations"

Hiroya Yamaguchi (NASA Goddard Space Flight Center/University of Maryland)

"Studies of Evolution and Origins of Supernova Remnants by X-ray Spectral Analysis of Non-Equilibrium Plasmas"

Roger Wendell (Kamioka Observatory, Institute for Cosmic Ray Research, The University of Tokyo)

"Evidence for the tau appearance in the atmospheric neutrino oscillation"

• **Beam Physics:**

Masao Nakao (National Institute of Radiological Sciences)

"Resonance coupling induced enhancement of indirect transverse cooling in a laser-cooled ion beam"

Hiroyuki Harada (Japan Atomic Energy Agency)

"Painting-injection study using a virtual accelerator in a high-intensity proton accelerator"

• **Division 1 (Atomic and Molecular Physics, Quantum Electronics, Radiation):**

Takuro Ideguchi (Research Centre of Spectrochemistry, School of Science, The University of Tokyo)

"Ultrafast molecular spectroscopy with an optical frequency comb"

Seiji Sugawa (National Institute of Standards and Technology)

"Research for novel strongly correlated quantum phases in an optical lattice"

Tomoyuki Morimae (Advanced Scientific Research Leaders Development Unit, Gunma University)

"Application of measurement-based quantum computation to condensed matter and cryptography"

• **Division 2 (Plasma):**

Makoto Sasaki (Research Institute for Applied Mechanics, Kyushu University)

"Theoretical Study of Spatio-temporal Structures of Oscillatory Zonal Flows and Energy Transfer Processes"

Junya Shiraishi (Japan Atomic Energy Agency)

"Formulation of matching theory for flowing plasmas"

• **Division 3 (Magnetism):**

Hiroto Adachi (Advanced Science Research Center, Japan Atomic Energy Agency)

"Theoretical study of spin Seebeck effect"

Toshio Miyamachi (Institute for Solid State Physics, The University of Tokyo)

"Atomic scale spin engineering by spin polarized STM"

Hironori Yamaguchi (Department of Physical Science, Graduate School of Science, Osaka Prefecture University)

"Syntheses of various quantum magnets by using verdazyl radical crystals"

• **Division 4 (Semiconductors, Mesoscopic Systems and Localization):**

Rui Sakano (ISSP, The University of Tokyo)

"Theoretical study of nonequilibrium Kondo effect and current fluctuations in quantum dots"

Takahiro Morimoto (RIKEN)

"Theoretical study of classification and optical responses of topological materials"

• **Division 5 (Optical Properties of Condensed Matter):**

Kuniaki Konishi (Institute for Photon Science and Technology, Graduate School of Science, The University of Tokyo)

"Circular polarization control utilizing symmetries of artificial nanostructures"

Naoto Tsuji (Department of Physics, Faculty of Science & Graduate School of Science, The University of Tokyo)

"Theoretical study of nonequilibrium phase transitions in strongly correlated electron systems"

Ryusuke Matsunaga (Department of Physics, Faculty of Science, The University of Tokyo)

"Higgs amplitude mode in superconductors studied by terahertz wave"

• **Division 6 (Metal physics (Liquid metals, Quasicrystals), Low Temperature physics (Ultralow Temperatures, Superconductivity, Density Waves)):**

Yasumasa Tsutsumi (Condensed Matter Theory Laboratory, RIKEN)

"Theoretical Studies of Topological Superfluid ^3He Phase"

Yuki Nagai (Center for Computational Science & e-Systems, Japan Atomic Energy Agency)

"Theoretical Studies of Unconventional Superconductors by means of Quasiclassical Numerical Method"

• **Division 7 (Molecular Solids):**

Katsuaki Sugawara (WPI Research Center, Advanced Institute for Materials Research, Tohoku University)

"Electronic structure of graphene related materials studied by high-resolution ARPES"

Kazuhiro Yanagi (Department of Physics, Tokyo Metropolitan University)

"Control of Physical Properties of Single Wall Carbon Nanotubes"

Satoshi Yamashita (Department of Chemistry, Graduate School of Science, Osaka University)

"Thermodynamic Studies on the excitation structure of spin liquid phase with Fermi liquid like character"

• **Division 8 (Strongly Correlated Electron Systems):**

Masafumi Udagawa (School of Engineering, The University of Tokyo)

"Theoretical studies on the effect of geometrical frustration in itinerant electron systems"

Seiichiro Onari (Department of Physics, Okayama University)

"Study of Mechanism of Superconductivity in Iron-based Superconductors by Orbital Fluctuation"

Hosho Katsura (Department of Physics, The University of Tokyo)

"Theoretical studies of magnetism and ferroelectricity in multiferroic systems"

• **Division 9 (Surfaces & Interfaces, Crystal Growth):**

Akari Takayama (Department of Physics, The University of Tokyo)

"Spin-polarized ARPES study of Rashba effect in group V semimetal thin films"

Sinichiro Hatta (Department of Chemistry, Kyoto University)

"Study of low dimensional physics at surfaces: charge-density-wave and Rashba effect"

• **Division 10 (Dielectrics, Ferroelectricity, Lattice Defects and Nanostructures, Phononic Properties, and X-ray and Particle Beams):**

Hiroki Taniguchi (Graduate school of Science, Nagoya University)

"Mechanism of Ferroelectricity in Perovskite-type oxides and prospect for new ferroelectric materials"

Yuki Tokumoto (Institute of Industrial Science, The University of Tokyo)

"Fundamental studies of dislocation dynamics and defect control in III-Nitride semiconductors"

• **Division 11 (Fundamental Theory of Condensed Matter Physics, Statistical Mechanics, Fluid Dynamics, Applied Mathematics, Socio- and Econophysics):**

Yuki Izumida (Faculty of Science, Ochanomizu University)

"Study on limitation of maximum-power efficiency of heat engines"

Shu Tanaka (Yukawa Institute for Theoretical Physics, Kyoto University)

"Study on entanglement of a two-dimensional quantum many-body system"

Takahiro Nemoto (Graduate School of Science, Kyoto University)

"Development of evaluation method for large-deviation function of stationary stochastic process based on "measurement-and-feedback" operations"

Yusuke Maeda (The Hakubi Project, Kyoto University)

"Discovery and Control of biopolymer segregation under thermal and density gradient"

• **Division 12 (Soft Matter Physics, Chemical Physics, Biophysics):**

Takeshi Kawasaki (Laboratoire Charles Coulomb, Université Montpellier 2)

"Theoretical study of supercooled liquids, glasses and crystals focusing on crystalline order"

Yutaka Sumino (Department of Applied Physics, Faculty of Science Division I, Tokyo University of Science)

"Experimental and theoretical study of spontaneous motions in non-equilibrium soft matter systems"

• **Division 13 (Physics Education, History of Physics, Environmental Physics):**

Junichiro Yasuda (Institute of Arts and Sciences, Yamagata University)

"Evaluation of the Validity of the Force Concept Inventory with Subquestions"

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