

Young Scientist Award of the Physical Society of Japan, 2021

Every year, the Physical Society of Japan presents Young Scientist Awards to young researchers who have made outstanding achievements in their early research careers. This year's winners were recently decided by the board of directors of the JPS according to the recommendations from the selection committees established in 19 divisions of the JPS. The maximum number of winners from each division has been determined based on the number of talks given at the Annual Meetings in the past three years. All the winners are to give an award lecture at the next Annual Meeting of the JPS scheduled for March 2021. Here is the list of winners and their research topics.

Theoretical Particle Physics:

Yohei Ema(The Deutsches Elektronen-Synchrotron)

“Scalaron in Higgs inflation”

Masatoshi Yamada(Heidelberg University)

“Quantum gravity effect in a scenario with asymptotic safety and its application to an extended Higgs model”

Chang-Tse Hsieh(Kavli Institute for the Physics and Mathematics of the Universe / The Institute for Solid State Physics, The University of Tokyo)

“Anomaly of the Electromagnetic Duality of Maxwell Theory”

Experimental Particle Physics:

Yosuke Ashida(Kyoto University)

“Measurement of Neutrino and Antineutrino Neutral-Current Quasielastic-like Interactions and Applications to Supernova Relic Neutrino Searches”

Masahiko Saito(The University of Tokyo)

“Search for direct Chargino production based on a disappearing-track signature at $\sqrt{s} = 13$ TeV”

Tatsumi Nitta(Waseda University)

“Search for the weak vector boson scattering in semileptonic final states in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector”

Theoretical Nuclear Physics:

Yuji Hirono(Asia Pacific Center for Theoretical Physics)

“Topological order in gauge theories of gapless superfluidity and its appearance condition”

Yuto Mori(Department of Physics, Faculty of Science, Kyoto University)

“Toward solving the sign problem with the path optimization method”

Yasuhiro Yamaguchi(Japan Atomic Energy Agency)

“The mass spectrum of Pc pentaquarks in hadron dynamics”

Experimental Nuclear Physics:

Daiki Sekihata(Center for Nuclear Study, Graduate School of Science, University of Tokyo)

“Measurement of neutral mesons and direct photons in pp and Pb-Pb collisions at $\sqrt{s_{NN}}=5.02$ TeV”

Takahiko Masuda(Research Institute for Interdisciplinary Science, Okayama University)

“X-ray pumping of ^{229}Th nuclear clock isomer”

Taiki Tanaka(Department of Nuclear Physics, Research School of Physics and Engineering, Australian National University)

“Study of quasielastic barrier distributions towards superheavy nuclei synthesis”

Cosmic Ray and Astrophysics:

Yutaro Enomoto(Department of Applied Physics, School of Engineering The University of Tokyo)

“Study of interferometer locking scheme for gravitational-wave detectors”

Shigeo S. Kimura(The Frontier Research Institute for Interdisciplinary Sciences, Tohoku University)

“Theoretical Study of High Energy Phenomena in Black Hole Accretion Flows”

Yuuki Wada(RIKEN Hakubi Research Teams, Extreme Natural Phenomena RIKEN Hakubi Research Team)

“Studies of photonuclear reactions triggered by lightning discharges”

Beam Physics:

Takayuki Kubo(High Energy Accelerator Research Organization)

“Theoretical Study on Super Conducting Accelerating Cavities”

Heishun Zen(Kyoto University Institute of Advanced Energy)

“Research and Development of improving performance of a midinfrared free electron laser”

Division 1 (Atomic and Molecular physics, Quantum Electronics, Radiation):

Tomoki Ozawa(Advanced Institute for Materials Research at Tohoku University)

“Study of geometric effects, especially of quantum metric, in ultracold atomic gases and other synthetic quantum systems”

Fumihiro Kaneda(Frontier Research Institute of Interdisciplinary Sciences, Tohoku University)

“Study of high-efficiency single photon sources, entanglement, and uncertainty relations”

Shingo Kono(Center for Emergent Matter Science, RIKEN)

“Quantum control and measurement of itinerant microwave photons using superconducting quantum circuits”

Division 2 (Plasma):

Naoki Sato(Department of Complexity Science and Engineering, Graduate School of Frontier Sciences, The University of Tokyo)

“Statistical mechanics with topological constraints: self-organization in foliated phase space”

Seiya Nishimura(Department of Electric and Electronic Engineering, Hosei University)

“Theoretical study on kinetic effects on magnetohydrodynamic instability”

Division 3 (Magnetism):

Hiroaki Ishizuka(Department of Physics, Tokyo Institute of Technology)

“Theory of Asymmetric Scattering and Magnetic Transport by Magnetic Fluctuations”

Katsuhisa Taguchi(SEMITEC)

“Theoretical study of inverse Faraday effect and its application”

Division 4 (Semiconductors, Mesoscopic Systems and Quantum Transport):

Kohei Kawabata(Department of Physics, University of Tokyo)

“Symmetry and topology in non-Hermitian physics”

Ryutaro Yoshimi(RIKEN Center for Emergent Matter Science)

“Experimental study on quantum transport phenomena in topological insulator thin films”

Division 5 (Optical Properties of Condensed Matter):

Yohei KAWAKAMI(Department of Physics, Tohoku University)

“Photoinduced phase transitions and strong field effects in correlated materials”

Hirokazu TAHARA(Institute for Chemical Research, Kyoto University)

“Quantum coherent dynamics of photoexcited states in semiconductor nanostructures”

Division 6 (Metal Physics (Liquid Metals, Quasicrystals), Low Temperature Physics (Ultralow Temperatures, Superconductivity, Density Waves)):

Satoshi Yui(Research and Education Center for Natural Sciences, Keio University)

“Coupled Dynamics of the Two-Fluid Model in Superfluid ^4He ”

Yasuhiro Tada(The University of Tokyo, Institute of Solid State Physics)

“Theoretical investigation on the edge current and orbital angular momentum in chiral superfluids”

Division 7 (Molecular Solids):

Hiroshi Oike(Department of Applied Physics, The University of Tokyo)

“Development and control of novel electronic phases in organic strongly correlated electron systems”

Ryosuke AKASHI(Department of Physics, The University of Tokyo)

“First-principles study on the superconducting phase in hydrogen sulfide under high pressure”

Division 8 (Strongly Correlated Electron Systems):

Atsuo Shitade(Theoretical and Computational Molecular Science, Institute for Molecular Science)

“Theoretical study on cross-correlated responses in crystals based on electronic multipole”

Shintaro Hoshino(Graduate School of Science and Engineering, Saitama University)

“Theoretical study on electron order in strongly correlated electron systems with multi-orbital degrees of freedom”

Yuta Mizukami (Department of Advanced Materials Science, University of Tokyo)

“Experimental study on electron pairing formation in strongly correlated superconductors”

Yoshikazu Mizuguchi(Department of Physics, Graduate School of Science, Tokyo Metropolitan University)

“Discovery of BiS₂-based layered superconductors and elucidation of condition for superconductivity”

Division 9 (Surfaces & Interfaces, Crystal Growth):

Akitoshi Shiotari(Department of Advanced Materials Science, The University of Tokyo)

“Control of adsorption structures and valence states of nitric oxide at the single-molecule level”

Kuniyuki Miwa(Department of Chemistry, Northwestern University)

“Theoretical studies on the optical and transport properties of molecular systems at the nanoscale”

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

Norihiro Oshime(National Institutes for Quantum and Radiological Science and Technology, Quantum Beam Science Research Directorate, Kansai Photon Science Institute, Synchrotron Radiation Research Center)

“Ferroelectric skewed electronic band structure induced by electric polarization”

Hikaru Saito(Institute for Materials Chemistry and Engineering, Kyushu University)

“Electron beam spectroscopy for plasmonic crystals”

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

Tamura Ryo(National Institute for Materials Science, International Center for Materials Nanoarchitectonics(MANA))

“Development of a method for estimating model parameters from experimental data by means of machine learning”

Tetsuhiro Hatakeyama(The University of Tokyo, Graduate School of Arts and Sciences)

“Theoretical study on peculiar dynamical properties of circadian clocks”

Ryusuke Hamazaki(Non-equilibrium Quantum Statistical Mechanics RIKEN Hakubi Research Team)

“Studies on thermalization processes of isolated and open quantum many-body systems”

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

Tetsuya Hiraiwa (Mechanobiology Institute, National University of Singapore)

“Mechanics of Cytoskeleton and Dynamics of Multi-cellular Tissues”

Fujihashi Yuta (Institute for Molecular Science, National Institutes of Natural Sciences)

“Theoretical study on dynamic processes in complex molecular systems based on quantum science and technology”

John Jairo Molina (Department of Chemical Engineering, Kyoto University)

“Novel Soft Matter Physics through Computational and Information Science”

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