Curriculum Vitae

Atsushi Taruya

Gender: Male

Birthday: 13th October, 1970

Nationality: Japanese

Current position: Associate professor

Primary affiliation and Address:
Yukawa Institute for Theoretical Physics, Kyoto University
Kitashirakawa Oiwakecho, Sakyo-ku, Kyoto 606-8502, Japan

Education:

1993 B.A., School of Science, Department of Physics, Nagoya University
1995 M.S., Graduate school of Science, Division of particle and astrophysical sciences, Nagoya University
1998 Ph.D., Graduate school of Science, Division of particle and astrophysical sciences, Nagoya University

PhD thesis: ”Cosmological perturbation in reheating after inflation” (1998)

Fellowships and positions:

1998 – 1999 Research fellow, Faculty of Integrated Human Studies, Kyoto University
1999 – 2000 Research fellow, Research Center for the Early Universe, School of Science, The University of Tokyo
2000 – 2001 Research Fellow of Japan Society of Promotion of Science, Department of Physics, The University of Tokyo
2001 –2013 Assistant Professor, Research Center for the Early Universe, School of Science, The University of Tokyo
2013 – Associate Professor, Yukawa Institute for Theoretical Physics, Kyoto University
2025 – KIAS Scholar, Korea Institute for Advanced Study

Membership:

Physical Society of Japan
Astronomical Society of Japan
International Astronomical Union
Japanese Association of Theoretical Astronomy and Astrophysics

Research themes and publications:

- My major research activities focus on the study of the large-scale structure of the Universe in observational cosmology. In particular, I have been working on the ***statistics and dynamics of large-scale structure*** both from theoretical and observational perspectives. I have also been involved in several interdisciplinary research:

  - Dark matter search using terrestrial electromagnetic environment,
  - Gravitational-wave cosmology,

  In the past, I have also worked on the measurements and characterization of exoplanets, as well as the long-term evolution of self-gravitating system from the perspective of nonequilibrium statistical physics.

- 213 refereed articles, H-index 61 (as of 5th June 2026, based on ADS)

Awards:

The 2018 PASJ Excellent Paper Award, "The Subaru FMOS galaxy redshift survey (FastSound). IV. New constraint on gravity theory from redshift space distortions at z ~ 1.4" by T. Okumura et al. Vol. 68 (2016), article id. 38 (as a co-author), (16th March 2019)

The 2016 Yukawa-Kimura prize, "exploration of precision nonlinear perturbation theory for gravitational evolution of structures in the universe", Yukawa memorial foundation (18th Jan. 2017)

Research grants in past 10 years:

2026—2030 Grant-in-Aid for Scientific Research (A) (25H02044, as PI) "Cosmology Across All Spatial Scales with Multi-dimensional Galaxy Observations"

2024—2027 Grant-in-Aid for Scientific Research (B) (23K25868, as co-I) "Relativistic Cosmology in the Era of High-precision, Multi-scale, and Multi-messenger Observations: Toward a Comprehensive Understanding of the Universe" (PI: A. Naruko)

2021—2026 Grant-in-Aid for Scientific Research (B) (23K20844, as PI) "Exploration of novel cosmological probes of large-scale galaxy surveys that can reveal a possible deviation from the standard cosmological model"

2020—2025 Grant-in-Aid for Transformative Research Area (A) (20H05861, as co-I) "What is dark matter ? – Comprehensive study of the huge discovery space in dark matter", C02 group (PI: S. Ando)

2016—2020 Grant-in-Aid for Scientific Research (B) (15H03977, as PI) "Development and application of data analysis method for precision cosmology based on two- and three-point statistics of large-scale structure of the Universe"

2015—2020 Grant-in-Aid for Scientific Research on Innovative Areas (15H05889, as co-I) "Why does the Universe accelerate?-Exhaustive study and challenge for the future", A02 group (PI: F. Takahashi)

International collaborations in past 10 years:

2025 (October) JSPS Bridge Fellowship Program (BR250304) "Development of field-level prediction of large-scale cosmic fields in non-standard theories of gravity and energy" (Name of fellow: Benjamin Bose)

2025 (October—January) JSPS Invitational Fellowship for Research in Japan (long term) (L22518) "Impact of prompt cusp formation on indirect dark matter detection experiments" (Name of fellow: Stéphane Colombi)

2024—2026 JSPS Bilateral Joint Research Projects (SAKURA program) "Impact of prompt cusps on dark matter indirect detection" (PI: A. Taruya (Japan), S. Colombi (France))

2024 SP+Fund (Research exchange program with Kyoto University's strategic partnership institutions) "Exploring the nature of dark matter through astronomical observations: novel detection strategies from cosmic structure formation" (PI: A. Taruya (Kyoto U.), H. Oliver (U. Vienna))

2018 (March—September) JSPS Postdoctral Fellowship for Research in Japan (short term) (PE17043) "Testing and constraining modification of gravity with redshift-space bispectrum" (JSPS Fellow's name: Benjamin Bose)

2017 (March—August) JSPS Invitational Fellowship for Research in Japan (long term) (L16519) "Deciphering cosmological information from clustering statistics of galaxies and clusters" (Name of fellow: Yann Rasera)