

The 14th RESCEU symposium: “From Large to Small Structures in the Universe”

October 30 – November 2, 2023@Koshiba Hall, Univ. of Tokyo

Monday, October 30

9:00-9:30: **Registration** @ Koshiba hall

9:30-9:40: **Opening address:** Jun'ichi Yokoyama (director of RESCEU)

9:40-9:50: **Logistics:** Hiroto Mitani

9:50-10:55: **Dark Matter Halos and Galaxies** (Chair, Masamune Oguri)

- Yipeng Jing (25min): The connection between dark matter halos and emission line galaxies (ELGs) and evidence for galactic conformity
- Atsushi Taruya (25min): To be or not to be: (non-)universal features in dark matter halos
- Hyunbae Park (15min): Impact of small-scale structure on reionization

10:55-11:20: Coffee

11:20-12:35: **Machine learning in Astronomy** (Chair, Naoki Yoshida)

- Kana Moriwaki (25min): Deep learning application to large-scale structure of the universe traced by line intensity
- Pablo Lemos (25min): Machine Learning Powered Inference in Astronomy
- Ofer Lahav (25min): AI for Cosmological Experiments: Evolution or Revolution?

12:35-14:00: Lunch

14:00-15:30: **Galaxy Surveys and their cosmological implications** (Chair, Ofer Lahav)

- Masahiro Takada (25 min): Subaru HSC and PFS
- Takahiro Nishimichi (25min): Emulator as a theoretical template in cosmological inference
- Toshiya Namikawa (25min): Probing inflationary gravitational waves with high-precision cosmic microwave background B-modes
- Yuka Yamada (15min): Target selection of [O II] emission line galaxies for PFS observation

15:30-15:50: Coffee

15:50-17:05: Baryonic evolution of cosmic structures
(Chair, Masahiro Takada)

- Jia Liu (25min): Effects of baryonic feedback on the cosmic web
- Renyue Cen (25min): The Missing Pillar In Galaxy Formation
- Eiichiro Komatsu (on-line) (25min): The Temperature of Hot Gas in the Universe

Tuesday, October 31

9:00-10:30: From Fluctuations to Compact Objects (Chair, Atsushi Taruya)

- Jun'ichi Yokoyama (25min): Small to Large-scale fluctuations in the universe
- Masamune Oguri (25min): Gravitationally lensed supernovae
- Masahiro Morikawa (15min): The Universality of Astronomical Objects from Low-Frequency Fluctuations
- Kenta Hotokezaka (25min): Neutron Star Mergers and Kilonovae

10:30-10:50: Coffee

10:50-12:00: Black Holes and Gravitational Wave (Chair, Kipp Cannon)

- Reem Sari (25min): Dynamical Processes around Supermassive Black Holes.
- Soichiro Morisaki (15min): Rapid localization and inference on compact binary coalescences with the Advanced LIGO-Virgo-KAGRA gravitational-wave detector network
- Daiki Watarai (15min): Physically consistent gravitational waveform for capturing beyond-GR effects in the compact binary merger phase
- Suyog Garg (15min): Deep Convolutional Neural Network for detecting Gravitational Wave signals from Eccentric Compact Binaries

12:00: Conference Photo

12:20-14:00: Lunch

14:00-15:15: Numerical Simulations (Chair, Kana Moriwaki)

- Kohji Yoshikawa (25min): Vlasov-Poisson simulation of collisionless self-gravitating systems
- Naoki Yoshida (25min): Putting the Universe in a computer
- Michiko Fujii (25min): N-body simulations of star clusters

15:15-15:35: Coffee

15:35-17:20: Cosmological Parameters (Chair, Yipeng Jing)

- Changbom Park (25min): Discordance of the flat Λ CDM 'concordance' model: Evidence for the Dark Energy Equation of State Parameter $w > -1$
- Takahiko Matsubara (25min): Statistics of tensor fields in observational cosmology and nonlinear perturbation theory
- Jingjing Shi (15min): Galaxy Intrinsic Shape - Challenge and Opportunity
- Yuting Liu (15min): Hubble constant from the cluster-lensed quasar system SDSS J1004+4112: investigation of the lens model dependence
- Shun Saito (25min): Prospects from Emission-Line Galaxy Redshift Surveys

Wednesday, November 1

9:00-10:35: Protoplanetary Disks (Chair, Hiroto Mitani)

- Nami Sakai (25min): Protostellar disks formed in diverse chemical environments
- Yuri Aikawa (25min): Chemical and Physical Evolution of Protoplanetary Disks
- Daisuke Takaishi (15min): Formation of unipolar outflow and "protostellar rocket effect" in magnetized and turbulent molecular cloud cores
- Masataka Aizawa (15min): Revealing faint asymmetric structures in dust continuum emission of proto-planetary disks
- Anton Feeney-Johansson (15min): Studying the velocity and angular momentum structure of protostellar outflows in the eDisk survey

10:35-11:00: Coffee

11:00-12:35: Observations and Modellings of Exoplanets (Chair, Konstantin Batygin)

- Othman Benomar (25min): Asteroseismology as a Tool to Probe Stellar Interiors and Its Contribution to Exoplanet Science
- Teruyuki Hirano (15min): Chromatic Measurements of Radial-Velocity Jitter
- Shin'ichirou Yoshida (15min): Numerical modeling of rapidly rotating brown dwarfs
- Hiroto Mitani (15min): Atmospheric escape of hot Jupiters
- Hajime Kawahara (25min): Initiatives at ISAS for Exploring Habitable Worlds

12:35-14:00: Lunch

14:00-16:25 **Dynamics of Few-Body and Many-Body Systems**

(Chair, Kenta Hotokezaka)

- Konstantin Batygin (25min): The Planet 9 hypothesis: a status update
- Kento Masuda (15min): A planet-planet eclipse in the Kepler-51 system?
- Alessandro Trani (25min): Three-body encounters in black hole discs around a supermassive black hole
- Toshinori Hayashi (15min): Constraining the binarity of dark companions in Gaia BH1 and Gaia BH2
- Hideki Asada (15min): Relativistic three-body problem
- Yasushi Suto (50min): from N to 3

18:00-: **conference banquet@Forest Hongo**

Thursday, November 2

9:30-11:55: **Astrophysics of Galaxies and Galaxy Clusters**

(Chair, Erik Reese)

- Noriko Yamasaki (25min): Understanding the soft-X-ray sky
- Tetsu Kitayama (25min): High-resolution measurements of the Sunyaev-Zel'dovich effect toward galaxy clusters
- Sebastien Peirani (25min): BH spin and galaxy orientation from new horizon simulations
- Kazuya Takahashi (15min): Imaging jet structures with gamma-ray burst afterglows
- Hiroki Kawai (15min): Analytical model for the statistics of ultra-high magnification events
- Kenneth Wong (15min): A Measurement of the Hubble Constant from Lensed Quasars
- Kazuo Makishima (25min): The Missing Last Piece in Understanding the Cluster Evolution

11:55-12:15: **Closing: Naoki Yoshida, Yasushi Suto**

- 15 min talks: ~12min + 3min Q&A
- 25 min talks: ~20min + 5min Q&A