

Extremely Big Eyes on the Early Universe 2019 (Kavli IPMU): Scientific program

Talks: 20 minutes + 10 for discussion unless otherwise noted

Monday, March 25

- 8:30 - 9:00 **Registration**
- 9:00 - 10:30 **Meeting introduction and the ELTs** (Chair: Nobunari Kashikawa)
 John Silverman, *Kavli IPMU*
 Nobunari Kashikawa, *Univ. of Tokyo*
- Overview of the first E³ meeting at UCLA
 Tommaso Treu, *UCLA* 15
- Thirty Meter Telescope
 Tomo Usuda, *NOAJ*
- Giant Magellan Telescope
 Byeong-Gon Park, *KASI*
- 10:30 - 11:00 Coffee break
- 11 - 12:00 The ESO Extremely Large Telescope
 Michele Cirasuolo, *ESO*
- Exploring the high-redshift universe with wide-field multi-object NIR spectrograph
 on TMT
 Masayuki Akiyama, *Tohoku University*
- 12:00 - 1:30 Lunch
- 1:30 - 3:00 **Galaxy assembly** (Chair: Karl Glazebrook)
- Galaxy assembly across cosmic time
 Yingjie Peng, *Kavli Institute for Astronomy and Astrophysics (KIAA)*
- Dense galaxy redshift surveys for the high-redshift Universe
 Ho Seong Hwang, *KASI*
- Lessons from Galaxy Kinematics: Open Questions after a Decade of IFS Surveys
 Emily Wisnioski, *ANU*
- 3:00 - 3:30 Coffee break
- 3:30 - 5:00 **Supermassive black holes in galaxy evolution** (Chair: Karl Glazebrook)
- Supermassive Black Holes and Their Impact on Galaxy Evolution
 Luis Ho, *KIAA, Peking University*
- Towards the Understanding of the Growth and Evolution of Supermassive black
 holes at galaxy centers
 Ji-hoon Kim, *Seoul National University (SNU)*
- Mapping uncharted territories: AGN feedback at low luminosities and high-z with
 the ELTs and JWST
 Vincenzo Mainieri, *ESO*

Tuesday, March 26

8:30 - 9:00 Coffee

9:00 - 10:30 **Galaxies and stellar populations** (Chair: Taddy Kodama)

Understanding star formation quenching with spatially resolved stellar populations and gas observations

Li-Hwai Lin, *ASIAA*

Using star clusters and their feedback to improve ionization models of HII regions

Katie Grasha, *ANU*

Local Analogs of Gas Accretion of Galaxies

Lei Hao, *Shanghai Astronomical Observatory*

10:30 - 11:00 Coffee break

11:00 - 12:00 **Galaxies cont.**

Sub-galactic views of cold gas and dust at the peak of galaxy assembly: pushing the ~ 100 pc frontier at $z \sim 3$

Wiphu Rujopakarn, *Chulalongkorn University*

Galaxy mergers up to $z < 5$: The star formation properties of merging galaxies at separations of 3-15 kpc

Andrea Silva, *NAOJ*

12:00 Group photo

Lunch

1:30 - 3:00 **Galaxy environments** (Chair: Myungshin Im)

Big and sharp eyes on galaxy cluster formation and evolution across cosmic times

Taddy Kodama, *Tohoku University*

Cosmic Mega-cities at high redshift: towards comprehensive understanding of massive proto-clusters and their galaxy constituents

Kyung-Soo Lee, *Purdue University*

Clustering of Galaxies at $z \sim 4-6$ Revealed with the Half-Million Dropouts Identified in the Extremely Large Subaru/Hyper Suprime-Cam Survey

Yuichi Harikane, *University of Tokyo*

3:00 - 3:30 Coffee break

3:30 - 4:30 **Feedback** (Chair: Myungshin Im)

Galaxy Formation at High Redshift in ELTs and JWST Era

Ken Nagamine, *Osaka University*

Chemical enrichment of early-type galaxies at quenching

Nobuo Arimoto, *Seoul National University*

4:30 - 5:00 **Studies with TMT HROS**

Characterizing Transiting Exoplanets with HROS
Hui Zhang, *Nanjing University* 15+5

Observations of Kuiper Belt binaries with TMT HROS
Jian Li, *Nanjing University* 15+5

Wednesday, March 27

9:00 - 10:30 **Supermassive black holes** (Chair: Masayuki Akiyama)

Probing the Physics of Supermassive Black Holes with Sharp and Not-so-sharp
Multi-frequency Eyes
Prajval Shastri, *International Centre for Theoretical Sciences, TIFR*

Studying the inner SFR (< 1kpc) in local MIR bright QSOs
Mariela Martinez Paredes, *KASI* 15+5

Probe the early growth of massive black holes with the Subaru-HSC and next
generation telescopes.
Wanqui He, *Tohoku University* 15+5

Extremely radio-loud AGN discovered by Subaru/HSC
Kohei Ichikawa, *Tohoku University* 15+5

10:30-10:50 Coffee break

10:50- 12:30 **High-z QSOs** (Chair: Masayuki Akiyama)

Studies of QSO host galaxies
Yiping Wang, *NAOC* 15+5

Faint, high-z quasars from the Infrared Medium-deep Survey and contribution of
quasars to IGM reionization
Myungshin Im, *SNU* 15+5

IMS J2204+0112, a low Eddington Ratio quasar in the Epoch of reionization
Yongjung Kim, *SNU* 15+5

Discovery of faint quasars at $z \sim 5$ in ELIAS-N1 field
Suhyun Shin, *SNU* 15+5

Obscured and Unobscured High-z QSOs
David Sanders, *University of Hawaii* 10 + 5

Highlights from QSO studies at $z > 6$ with the HSC Strategic Survey Program
John Silverman, *Kavli IPMU* 5 (if time permits)

5:30pm Banquet in Ueno Park

Thursday, March 28

- 9:00 - 9:30 Coffee
- 9:30 - 10:30 **Circumgalactic medium** (Chair: Ken Nagamine)
- Lighting up the Circumgalactic Medium of Distant Galaxies
J. Xavier Prochaska, *UC Santa Cruz*
- Revealing the small-scale structure of the circumgalactic medium
Ting Wen Lan, *Kavli IPMU*
- 10:30 - 11:00 Coffee break
- 11:00 - 12:00 Quasar spectroscopic probes of the $z > 5$ CGM & IGM
Emma Ryan-Weber, *Swinburne*
- Metals in the circumgalactic medium at $1.5 < z < 5$
Siwei Zou, *KIAA*
- 12:00 - 1:30 Lunch
- 1:30 - 3:00 **Intergalactic Medium** (Chair: Yiping Wang)
- Illuminating the cosmic web
Michael Rauch, *Carnegie*
- Probing the early Universe with high-redshift quasars
Xue-Bing Wu, *Peking University*
- Mapping the $z \sim 2-3$ Cosmic Web with 3D Lyman-alpha Forest Tomography
K. G. Lee, *Kavli IPMU*
- 3:00 - 3:30 Coffee break
- 3:30 - 5:30 IGM tomographic mapping around a giant Ly α nebula
Shiro Mukae, *University of Tokyo*
- Lensing and their applications with ELTs**
- High-resolution ELT imaging of Einstein Rings
Karl Glazebrook, *Swinburne*
- Cosmology from gravitational lens time delays - Advances in the era of ELTs
Ken Wong, *Kavli IPMU*
- High-z supernova**
- Time Domain Science in the Era of TMT
Nao Suzuki, *Kavli IPMU*

Friday, March 9

- 8:30 - 9:00 Coffee
- 9:00 - 10:30 **Very high-redshift universe** (Chair: Dave Sanders)
- Studying the first galaxies and reionization with ELTs
Tommaso Treu, *UCLA* 20+5
- Galaxies in the epoch of reionization: the high redshift Universe with ELTs and JWST
Andy Bunker, *Oxford University* 20+5
- ELT observations of globular clusters in formation at redshifts 3 to 10
Alvio Renzini, *INAF-Padova* 20 + 5
- Early Low-Mass Galaxies and Star-Cluster Candidates at $z \sim 6-10$ Identified by the Gravitational Lensing Technique and Deep Optical/Near-Infrared Imaging
Shotaro Kikuchihara, *University of Tokyo* 10+5
- 10:30 - 11:00 Coffee break
- 11:00 - 12:00 **Reionization** (Chair: Dave Sanders)
- Exploring Early Galaxies and Cosmic Structures at the Epoch of Reionization and Beyond : Synergies between Subaru and ELTs
Masami Ouchi, *University of Tokyo* 20 + 5
- Connecting observations of the first galaxies and the Epoch of Reionization
Simon Mutch, *Melbourne* 15+5
- Cosmic Reionization Studied by Subaru/HSC Observations of Lyman-alpha Emitters
Ryohei Itoh, *University of Tokyo* 10 + 5
- 12:00 - 1:00 Lunch
- 1:00 - 3:00 **Very high-redshift universe cont.** (Chair: Andy Bunker)
- Observing the first stars
Tilman Hartwig, *Kavli IPMU, University of Tokyo*
- Investigating the effect of environment in the Lyman alpha emission at high-redshift
Lucia Guaita, *Pontificia Universidad Catolica de Chile* 20 +5
- Lyman alpha halos around quasars at $z > 6$
Rieko Momose, *University of Tokyo*
- ALMA high-z galaxy observations and future prospects for TMT studies
Takuya Hashimoto, *Osaka-Sangyo University*
- 3:00 Alvio Renzini Final remarks and overview
- End of the meeting
- 3:00-4 IPMU tea time