



Extremely Big Eyes On the Early Universe

Sept. 9-13, 2019
Accademia dei Lincei, Rome

- **What potentially transformative observations will be enabled by giant telescopes? What capabilities are required?**
- **What are the key synergies between giant telescopes and other facilities? What are the areas and topics where a concerted effort will yield far superior results than the sum of all parts?**
- **What theoretical or observational work is needed in preparation for first light? What are the limitations in our understanding that need to be overcome?**
- **What calculations are required in order to make testable predictions and interpret the results of future astronomical observations?**

SOC:

- Adriano Fontana (co-chair)
- Laura Pentericci (co-chair)
- Alvio Renzini
- Marco Tavani
- Michele Cirasuolo
- Linda Tacconi
- Elizabeth Stanway
- Roser Pello
- David Elbaz
- Jesus Gallego
- Pascal Oesch
- Goran Ostlin
- Sarah Blyth

LOC:

- Laura Pentericci
- Adriano Fontana
- Giuliana Giobbi
- Letizia Caito
- Diego Paris

Confirmed invited speakers

- | | |
|--|---|
| <ul style="list-style-type: none"> • Rebecca Bernstein • Richard Bouwens • Nicolas Bouche' <ul style="list-style-type: none"> • Claudia Cicone • Michele Cirasuolo <ul style="list-style-type: none"> • Emanuele Daddi • Ric Davies • Mark Dickinson <ul style="list-style-type: none"> • Christophe Dumas • Laura Ferrarese • Steve Finkelstein • Kearn Grisdale | <ul style="list-style-type: none"> • Claudia Maraston • Alessandro Marconi • Annalisa Pillepich • Paola Santini • Roberto Scaramella • Daniel Schaerer • Raffaella Schneider • Francesco Shankar • David Sobral • Eros Vanzella • Susanna Vergani • Benedetta Vulcani |
|--|---|
- Francois Hammer
 - Roberto Maiolino



◆ **INAF**
ISTITUTO NAZIONALE
DI ASTROFISICA
20 ANNI DI RICERCA
SCIENTIFICA DI ECCELLENZA



ACCADEMIA NAZIONALE DEI LINCEI

EXTREMELY BIG EYES ON THE EARLY UNIVERSE
Accademia dei Lincei, Roma
Sept. 9-13, 2019

Programme

Monday, Sept. 9

08:30 – 09:15: Registration

09:15 - 09:25 Welcome and Introduction

09:15 – 09:55 Summary of previous meetings (A. Renzini)

SESSION I: ELTS Overview (Chair: L. Pentericci)

09:55 – 10:20 An Overview of TMT (Christophe Dumas) I

10:20 – 10:45 GMTO: Project Overview and Status (R. Bernstein) I

10:45 – 11:15 Coffee Break

11:15 – 11:40 An Overview of the ELT (M. Cirasuolo) I

11:40 – 12:05 Detecting Population III Stars with HARMONI on the ELT
(K. Grisdale) I

12:05 – 12:30 Imaging the High-Redshift Universe with MICADO on the ELT
(R. Davies) I

12:30 – 12:55 The scientific promise of HIRES, a high-resolution spectrograph
for the ELT (A. Marconi) I

13:00 – 14:25 Lunch

SESSION 2: ELTS Overview and Synergies (Chair: S. Finkelstein)

14:30 – 14:55 The ELT Multi-Spectrograph: latest news from MOSAIC
(F. Hammer) I

14:55 – 15:15 First Galaxies, Epoch of Reionization and Galaxies Evolution in the
ELT Era: which science with MOSAIC (L. Tasca)

15:15 – 15:35 MAORI for ELT: simulating resolved high-z galaxies
(P. Ciliegi)

15:35 – 15:55 Bridging Simulations and Observations in the Era of Extremely Big
Telescopes (R. Simons)

15:55 – 16:25 Coffee Break

16:25 – 16:50 Euclid Survey(s): a goldmine for large telescopes (R. Scaramella) I

16:50 - 17:10 Constraining First Star Formation with 21-cm Cosmology
(A. Schauer)

17:10 – 17:30 Exploiting galaxy-21cm synergies to shed light on the Epoch of
Reionization (P. Dayal)

17:30 – 18:30 Welcome Cocktail

Tuesday, Sept. 10

SESSION 3: Galaxy Assembly (Chair: E. Daddi)

- 09:00 – 09:25 Galaxy Assembly, outflows and the evolution of disks with the illustrious TNG simulations (A. Pillepich) I
- 09:25 – 09:50 Unveiling the active early galaxy assembly with emission-lines and ELTs (D. Sobral) I
- 09:50 – 10:10 Latest results from the MOSDEF Survey: Case for Multi-object Infrared Spectrograph on ELT (B. Mobasher)
- 10:10 – 10:30 GlAD: Gravitational Lensing and Dynamics combined analysis to unveil properties of high-redshift Galaxies (G. Chirivì)
- 10:30 – 10:50 Properties of dust-obscured Spitzer-selected sources at $z > 6$ (S. Deshmukh)

10:50 – 11:20 Coffee Break

- 11:20 – 11:45 Search and confirmation of passive galaxies in the early Universe (P. Santini) I
- 11:45 – 12:05 Properties of high-redshift passive galaxies: number density and contribution to the cosmic star formation history (E. Merlin)
- 12:05 – 12:25 Illuminating the dark side of cosmic star formation and stellar mass assembly at $z > 3$ (M. Talia)
- 12:25 – 12:45 Reaching the earliest star formation epochs in nearby dwarf Galaxies with ELTs (F. Annibali)
- 12:45 – 13:05 Big eyes on big guys: tracking the formation and transformation of massive Galaxies (M. Giavalisco)

13:05 – 14:20 Lunch

Session 4: Black Hole-Galaxy Co-evolution (Chair: A. Verma)

- 14:20 – 14:45 Probing black hole-Galaxy Co-evolution from de-biased scaling relations (F. Shankar) I
- 14:45 – 15:10 Extremely big Eyes on the co-evolution of Galaxies and Supermassive Black Holes (L. Ferrarese) I
- 15:10 – 15:30 Insights into the high-redshift Universe from cosmic noon studies of CIII and CIV (A. Stroe)
- 15:30 – 15:50 Flash Poster Presentations

15:50 – 16:20 Coffee Break

- 16:20 – 16:45 The early growth of the first supermassive Black Holes (R. Schneider) I
- 16:45 – 17:05 Origin of the first stars, Galaxies and massive Black Holes (U. Maio)
- 17:05 – 17:25 Revealing a population of dual supermassive black holes from Subaru to the ELTs (J. Silverman)
- 17:25 – 17:45 Galaxy Formation and Reionization (Stuart Wyithe)

Visit to the Forum of Augustus (20:30 – 21:30)

Wednesday, Sept. 11

Session 5: Re-Ionization and First Light (Chair: P. Oesch)

- 09:00 – 09:25 Extremely Big Eyes at the Focus of Cosmic Telescopes
(E. Vanzella) I
- 09:25 – 09:45 Using gravitational telescopes to probe the faint and distant
Universe (G. Bartosch Caminha)
- 09:45 – 10:05 A deep multi-wavelength imaging and spectroscopic investigation
of a reionized bubble at $z=7$ (M. Castellano)
- 10:05 – 10:25 Using the history of the Universe's reionization (J.M. Rodriguez)
- 10:25 – 10:45 First identification of 10-kpc Scale [CII] 158 μ m Halos around Star-
Forming Galaxies (S. Fujimoto)
- 10:45 – 11:05 Exploring the Sources of the reionization behind clusters with
MUSE (G. de la Vieuville)
- 11:05 – 11:30 Coffee break
- 11:30 – 11:55 The Bright Future with Big Eyes: Reionization and Early Galaxy
Formation in High Definition (R. Bouwens) I
- 11:55 – 12:20 Measuring the Evolution of Reionization with Big-Glass
Observations of Lyman-Alpha (S. Finkelstein) I
- 12:20 – 12:40 Determining the Stellar Ages of Galaxies in the Reionization Era
(G. Roberts-Borsani)
- 12:40 – 13:00 The hosts of early ionised bubbles: unveiling the most luminous
Lyman-alpha emitters in the epoch of Reionization (J. Matthee)
- 13:00 – 13:20 Probing Cosmic Dawn: determining the age of the most distant
Galaxies (N. Laporte)

13:20 – 14:40 Lunch

FREE AFTERNOON

Thursday, Sept. 12

**Session 6: Galaxy Stellar Populations & Star-formation Histories
(Chair: R. Pello)**

- 09:00 – 09:25 “Normal” and “extreme” stellar Populations and Galaxies in the early Universe (D. Schaerer) I
09:25 – 09:50 Extremely Big Eyes on Stellar Populations (C. Maraston) I
09:50 – 10:10 Physical Properties of dwarf star-forming Galaxies at intermediate Redshifts (J. Gallego)
10:10 – 10:30 Self-consistent Population spectral Synthesis with FADO: an exploration of Galaxy Evolution in the ELTs era (J.M. Gomes)

10:30 – 11:00 Coffee break

- 11:00 – 11:20 Synthetic Nebular Emission Lines of simulated Galaxies in the early Universe (M. Hirschmann)
11:20 – 11:40 Formation and chemical Evolution of dusty Galaxies at $z \geq 4$ (L. Graziani)
11:40 – 12:05 Big Eyes on the early Formation of massive structures (E. Daddi) I
12:05 – 12:25 Optically dark ALMA sources shed light on the formation of a Large-Scale Structure at $z \sim 3.5$ (L. Zhou)
12:25 – 12:45 Environment from cross-correlations: linking cause to effect in galaxy quenching (E. Kukstas)

12:45 – 14:00 Lunch

14:00 – 15:00 Guided Tour of Villa Farnesina

Session 7: Gas and Dust in Galaxies (Chair: L. Ferrarese)

- 15:00 – 15:25 Gas flows in distant Galaxies: from current facilities to ELT (R. Maiolino) I
15:25 – 15:45 Stellar Metallicities at $z > 2.5$ from rest-frame UV Spectra (F. Cullen)
15:45 – 16:05 Dust, gas, and star Formation in Galaxies at $z \sim 2$ (I. Shivaeei)
16:05 – 16:25 Census of dusty starbursts in the distant Universe via strong lensing (H. Dannerbauer)

16:25 – 16:50 Coffee Break

- 16:50 – 17:15 The Effects of the ICM on gas, dust and star formation histories: lessons learned from integral-field Spectroscopy at low Redshift (B. Vulcani) I
17:15 – 17:35 Dust production scenarios in Galaxies at $z \sim 6-8.3$ (A. Lesniewska)
17:35 – 17:55 Metallicity gradients in quiescent Galaxies at $z \sim 2$ (M. Longhetti)

19:30 – 22:00 Conference Dinner – L'Etoile Restaurant Hotel Atlante Star

Friday, Sept. 13

Session 8: Feedback Processes in Galaxies (Chair: M. Giavalisco)

09:00 – 09:25 The multiphase Baryon cycle in Galaxies and future prospects with the EELTs (C. Cicone) I

09:25 – 09:50 Extremely Big Eyes on galaxies and gas flow processes (N. Bouche) I

09:50 – 10:10 Reverberation Mapping and spinal structure of the Quasars (L. Berdina)

10:10 – 10:30 [CII] Properties and Star Formation-driven Outflows in high-z Galaxies (M. Ginolfi)

10:30 – 10:50 Finding the First Quasars with E-ELT and Euclid (D. Whalen)

10:50 – 11:15 Coffee Break

11:15 – 11:35 Active Galactic Nuclei in Dusty Starbursts at $z=2$: Feedback still to kick in (G. Rodighiero)

11:35 – 11:55 Probing AGN-Feedback and host Galaxy properties in the most luminous QSOs up to $z \sim 6$ with ALMA (M. Bischetti)

11:55 – 12:20 Gamma-ray Bursts as tools to probe the Early Universe (S. Vergani) I

12:20 – 12:40 Extended Galaxies in deep extragalactic fields are not an annoyance but a potential treasure trove (F. Buitrago)

12:40 – 13:15 Final discussion lead by M. Yalia, I. Shivaee, P. Dayal, and G. Roberts-Borsani

13:15 – 14:30 Lunch

END OF THE MEETING