

Lamiya Mowla

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Research

Extragalactic astronomy; observational galaxy formation and evolution; James Webb Space Telescope; modelling realistic observations of hydrodynamical simulations galaxies; development of low-cost instruments for small telescopes.

Work

Dunlap Postdoctoral Fellow / Dunlap Institute for Astronomy and Astrophysics,
University of Toronto
September 2020 - Present, ONTARIO, CANADA

Founder / Bangladesh Science Outreach
September 2013 - 2015, DHAKA, BANGLADESH

Education

M. Sc., M. Phil., Ph. D. in Astronomy / Yale University
September 2014 - August 2020, CONNECTICUT, USA
THESIS: Structural evolution of the most massive galaxies since $z \sim 3$.
ADVISOR: Prof. Pieter van Dokkum, Yale University.

B. A. (Hons.) in Astrophysics / Wellesley College
September 2009 - May 2013, MASSACHUSETTS, USA

Visiting Student Program / University of Oxford
October 2011 - June 2012 (Junior Year Abroad), OXFORDSHIRE, UK

O-levels and A-levels / Cephalon International School
January 2005 - May 2009, DHAKA, BANGLADESH

Awards

Dunlap Fellowship / 2020-24
University of Toronto, ON, Canada

Horton-Hallowell Fellowship / 2014-15
Wellesley College, MA, USA

Australian Astronomical Observatory Student Fellowship / 2013
Australian Astronomical Observatory, Sydney, Australia

John Charles Duncan Prize in Astronomy / 2013
Wellesley College, MA, USA

Phyllis J Fleming Prize in Physics / 2013
Wellesley College, MA, USA

Sigma Xi / 2013
Wellesley College, MA, USA

Wellesley College Advanced Research Fellowship / 2013
University of Oxford, Oxfordshire, UK.

Jerome A. Schiff Fellowship / 2012-13
Wellesley College, MA, USA

The Daily Star Award for best O-level and A-level result in Bangladesh / 2007 and 2009
Dhaka, Bangladesh

Grants

Dunlap Seed Grant / Principal Investigator / CAD 34,100

Pan African School for Emerging Astronomers 2022: Zambia.

Dunlap Seed Grant / Co-Investigator / CAD 10,000

Construction of a 3.7-metre Radio Telescope in Nigeria.

Dunlap Seed Grant / Principal Investigator / CAD 30,000

A Telescope to Kickstart Astrotourism and Astronomy Research in Bangladesh.

Dunlap Seed Grant / Principal Investigator / CAD 5,500

The Pan-African School for Emerging Astronomers Alumni Program.

Observational Programs

Hubble Space Telescope / Cycle 29 / Co-Investigator / 56 orbits

The Final Frontier: HST and JWST Exploration of Galaxies Across Cosmic Epochs. *PI: M. Bradac*

James Webb Space Telescope / Cycle 1 / Co-Investigator / 70.5 hours

UNCOVER: Ultra-deep NIRCam and NIRSpec Observations Before the Epoch of Reionization. *PI: I. Labbe and R. Bezanson*

James Webb Space Telescope / Cycle 1 / Co-Investigator / Archival

Preventing the Slit-Loss Catastrophe Using Flexible, Spatially Resolved Galaxy Models. *PI: J. Leja*

James Webb Space Telescope / Cycle 1 / Co-Investigator / 22.5 hours

Ultra-deep continuum spectroscopy of quiescent galaxies at 1.0. *PI: M. Kriek*

James Webb Space Telescope / Cycle 1 / Team Member / 210 hours

Canadian Unbiased Cluster Survey (CANUCS)

Hubble Space Telescope / Cycle 28 / Co-Investigator / 159 orbits

3D-DASH: A Wide Field WFC3/IR Survey of COSMOS. *PI: I. Momcheva*

Hubble Space Telescope / Cycle 28 / Co-Investigator / Archival

Pirate: Walking the Plank to Spatially Resolved Stellar Populations in CANDELS. *PI: E. Nelson*

TripleSpec - Palomar Telescope / Principle Investigator / 20 nights

Spectroscopic follow-up of the Most Massive Galaxies in the COSMOS-DASH survey at $z \sim 1.4$.

Atacama Large Millimeter/submillimeter Array / Cycle 6 / Co-Investigator / 20 hours

Measuring molecular gas reservoirs in post-starburst galaxies during the peak quenching era. *PI: M. Kriek*

Atacama Large Millimeter/submillimeter Array / Cycle 5 / Co-Investigator / 4 hours

CO line widths of massive, compact galaxies with anomalously small $H\alpha$ line widths at $z \sim 2$. *PI: E. Nelson*

NIRES - Keck Telescope / Co-Investigator / 4 nights

Spectroscopic follow-up of the Most Massive Galaxies in the COSMOS-DASH survey at $z \sim 2$. *PI: P. van Dokkum*

NIRSpec - Keck Telescope / Co-Investigator / 4 nights

Spectroscopic follow-up of Massive Close-Pair galaxies at $z \sim 2$ in the COSMOS-DASH survey. *PI: P. van Dokkum*

MOSFIRE - Keck Telescope / Co-Investigator / 12 nights

The chemical enrichment, star-formation and assembly histories of $z \sim 1.4 - 2.0$ quiescent galaxies. *PI: M. Kriek*

Hubble Space Telescope / Cycle 24 / Co-Investigator / 16 orbits

Imaging of three Ultra Diffuse Galaxies with measured stellar kinematics. *PI: P. van Dokkum*

Hubble Space Telescope / Cycle 23 / Team Member / 57 orbits

Selected Invited Talks

Queens University Physics and Astronomy Colloquium, March 2023
Large Early Galaxy Astrophysics - Census Survey Workshop, June 2022
Canadian Astronomical Society Annual General Meeting Keynote Speaker on Galaxy Evolution Session, May 2022
University of Pittsburgh Astronomy Seminar, April 2022
Saint Mary's University Astronomy Colloquium, October 2021
University of Toronto Astronomy Colloquium, September 2021
University of Massachusetts, Amherst Astronomy Colloquium, February 2020
University of California Berkeley, TAC Seminar, October 2019
Harvard University, Galaxies and Cosmology Seminar, October 2019
Max Planck Institute for Astronomy, Lunch talk, June 2019
Large Early Galaxy Astrophysics - Census Survey Workshop, June 2019

Selected Media Interviews

[BBC Science: 'Shiny, sparkly object' in James Webb space image](#)
[CNN: Webb telescope spies a celestial sparkler among the universe's earliest galaxies](#)
[IFL Science: JWST Sees "Sparkler Galaxy" Surrounded By Most Distant Star Clusters Ever Found](#)
[Al Jazeera: What mysteries of the universe will the James Webb telescope uncover? | The Stream](#)
[Forbes: Why The Webb Telescope's Incredible New Images Don't Mean The End For Hubble](#)
[Quirks and Quarks \(CBC Radio\): New Hubble image proves there's life in the old space telescope](#)
বিজ্ঞানচিন্তা: মহাবিশ্বের প্রাচীনতম নক্ষত্রপুঞ্জ আবিষ্কার
বিজ্ঞানচিন্তা: জেমস ওয়েবের মাধ্যমে প্রাচীন মহাবিশ্বকে স্বচ্ছভাবে দেখতে পাব

Teaching

Independent University of Bangladesh (IUB) / Advisor as Dunlap Fellow
2022 - Present, DHAKA, BANGLADESH

Collaborating with Prof. Khan Asad, Dept. of Physical Sciences, IUB, to develop the curriculum for the first undergraduate Minor in Astronomy program in Bangladesh (to be launched in 2024).

Yale Young African Scholars / Lead Instructor

Summer 2018, GHANA and RWANDA

Summer school for high school students from the African continent. Taught the same courses as in Yale Young Global Scholars.

Yale Young Global Scholars / Lead Instructor

Summer 2017, Yale University, CONNECTICUT, USA

Summer school for high school students from around the world.. Designed and taught five seminars on astronomy topics: i. *Galaxies Far Far Away*, ii. *Earth 2.0 - Searching for Habitable Exoplanets*, iii. *Gravitational Waves - The Ripples in Space-Time*, iv. *Eyes on the Sky I - Technological Frontiers in Astronomy*, v. *Eyes on the Sky II - Social Frontiers in Astronomy*.

Yale University / Teaching Fellow

2015-2017, CONNECTICUT, USA

Developed and taught weekly discussion sections and graded homework for courses: i. *Frontiers and Controversies of Astrophysics (ASTR 160)*, ii. *Galaxies and Cosmology (ASTR 220)*, iii. *Galaxies and the Universe (ASTR 120)*, iv. *Origins and Search for Life in the Universe (ASTR 130)*.

Wellesley College / Teaching Assistant

2010-2013, MASSACHUSETTS, USA

Physics Help Room Tutor, Homework Grader, Astronomy Lab Assistant

Student Mentoring

Anika Slizewsky / University of Toronto, ON, Canada

Ultra Diffuse Galaxies observed with JWST in MACS 0417.

Obada Al Ajeh / University of Toronto, ON, Canada

Spectroscopically following up the Sparkler with JWST/NIRSpec.

Nusrath Jahan / Shahjalal University of Science and Technology, Bangladesh

Sparkler analogues - Searching for other Sparkler-like objects in Webb's First Deep Field.

Olga St. Onge / University of Florida, FL, USA

Categorizing galaxies in Webb's First Deep Field using unsupervised dimensionality reduction.

Nusrath Jahan / Shahjalal University of Science and Technology, Bangladesh

Sparkler analogues - Searching for other Sparkler-like objects in JWST/NIRCam imaging of SMACS J0723

Jinoo Kim / University of Toronto, ON, Canada

Using a convolutional neural network to measure stellar mass-weighted morphological parameters of galaxies from multiwavelength images only and no spectral energy distribution modelling (Kim et al., ApJL, in prep.)

Daniella Morrone / University of Toronto, ON, Canada

Measuring stellar mass-weighted morphological parameters of galaxies from multiwavelength images and spectral energy distribution modelling of galaxies in Hubble's Extreme Deep Field (Morrone et al., RNAAS, in prep.).

Rebecca Ceppas de Castro / University of Toronto, ON, Canada

Investigating the evolution of spatially resolved attenuation of SIMBA galaxies using Noor (Castro et al., ApJL, in prep.).

Zach Webb / University of Massachusetts, Amherst, MA, USA

Investigating the best star formation indicator of SIMBA galaxies using Noor.

Sina Babai Zadeh / Western University, ON, Canada

Investigating the correlation between morphology and star formation history in galaxies from the EAGLE simulation.