RASHMI GOTTUMUKKALA

Curriculum Vitae

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EDUCATION

Doctor of Philosophy in Astrophysics (Ph.D.). **Ongoing**
Niels Bohr Institute, University of Copenhagen, Copenhagen, Denmark.

Master of Science in Astrophysics (M.Sc.). **2021 - 2023**
Department of Astronomy, University of Geneva, Geneva, Switzerland. CGPA: 5.84/6.00. Thesis defense: 6.00/6.00.

Postgraduate Diploma in Advanced Studies and Research (DipASR), *Summa Cum Laude*. **2020 - 2021**
Department of Physics, Ashoka University, Sonipat, India. CGPA: 4.00/4.00.

Bachelor of Science (Honours) Physics (B.Sc. (Hons)), *Cum Laude*. **2017 - 2020**
Department of Physics, Ashoka University, Sonipat, India. CGPA: 3.74/4.00.

Cambridge Advanced (A) & Advanced Subsidiary (AS) Level Examinations **2015 - 2017**
Private Candidate, Hyderabad, India.

Cambridge International General Certificate of Secondary Education (IGCSE) **2014 - 2015**
Private Candidate, Hyderabad, India.

SCHOLARSHIPS & AWARDS

Inlaks Shivdasani Scholarship, *Inlaks Shivdasani Foundation*, India. **Jun, 2021**
Awarded on academic merit, for complete funding for the Master in Astrophysics programme at the University of Geneva beginning in September, 2021. One amongst eight Inlaks Scholars chosen for the year 2021 out of 2250 applicants.

Academic Excellence as a Physics Major, *Ashoka University*, Sonipat, India. **Jul, 2020**

Dean's List, *Ashoka University*, Sonipat, India. **2017, 2018, 2019, 2020**
In recognition of academic excellence with a GPA ≥ 3.65/4.00 in five out of six semesters.

PUBLICATIONS

Weibel, A., Oesch, P., Barrufet, L., **Gottumukkala, R.**, et al. (March 2024). *Galaxy Build-up in the first 1.5 Gyr of Cosmic History: Insights from the Stellar Mass Function at $z \sim 4-9$ from JWST NIRCam Observations.* Submitted to MNRAS. In: arXiv.

Xiao, M., Oesch, P., Elbaz, D., + **Gottumukkala, R.**, et al. (September 2023). *Massive Optically Dark Galaxies Unveiled by JWST Challenge Galaxy Formation Models.* Submitted to Nature. In: arXiv.

Gottumukkala, R., Barrufet, L., Oesch, P., et al. *Unveiling the hidden universe with JWST: The contribution of dust-obscured galaxies to the stellar mass function at $z \sim 3-8$.* Accepted for publication in MNRAS.

Barrufet, L., Oesch, P., Weibel, A., + **Gottumukkala, R.**, et al. (2023). *Unveiling the Nature of Infrared Bright, Optically Dark Galaxies with Early JWST Data.* In: MNRAS.

MANUSCRIPTS IN PREPARARTION

Gottumukkala, R., Leslie, S. K., Hodge, J. A., et al. *The infrared and radio emission of distant galaxies in COSMOS-XS.*

Barrufet, L., Oesch, P. A., + **Gottumukkala, R.**, et al. *Quiescent or dusty? Unveiling the nature of extremely red galaxies at $z > 3$.*

Heintz, K., Brammer, G., + **Gottumukkala, R.**, et al. *The JWST-PRIMAL Archival Survey.*

CONFERENCES/SCHOOLS

EAS Annual Meeting, *Contributed talk*, Krakow, Poland. **Jul 2023**
TITLE: In the Spotlight: Characterising the Early Universe's Most Massive and Elusive Galaxies

IMPRS Summer School 2023, Heidelberg, Germany. **Sep 2023**
TITLE OF SCHOOL: Unravelling Glaaxy Evolution with JWST

PAST RESEARCH PROJECTS

MASTER'S THESIS: **Massive Galaxies in the Early Universe from First JWST Observations** **Sep 2022 - Present**
University of Geneva, Geneva, Switzerland. 60 ECTS
MENTORS: Prof. Pascal Oesch, Dr. Laia Barrufet
DETAILS: Determined the high-mass end of stellar mass function and cosmic star formation rate density of optically-faint galaxies with JWST/NIRCam at high redshifts.

PROJECT: **The infrared and radio correlation (IRRC) of distant galaxies in COSMOS-XS** **Jun 2022 - Present**
Leiden University, Leiden, The Netherlands.
PROGRAMME: Leiden/ESA Astrophysics Programme for Summer Students (LEAPS) (Jun-Aug 2022)
MENTORS: Dr. Sarah Leslie, Dr. Ian Roberts, Dr. Ashley Bemis
DETAILS: Conducted an analysis of the IRRC's evolution with redshift and stellar mass using data from the COSMOS-XS.

PROJECT: **Fluxes of galaxies with high-redshift ALMA surveys** **Mar 2022 - May 2022**
University of Geneva, Geneva, Switzerland.
MENTORS: Prof. Pascal Oesch, Dr. Laia Barrufet
POSITION: Research Assistant
DETAILS: Developed a code on Python to calculate fluxes using aperture photometry and elliptical Gaussian fitting. Code applied to high-redshift sources found in the ALMA surveys ALPINE and REBELS.

PROJECT: **Investigating the Performance of the CCD of TELESTO** **Feb 2022 - Jun 2022**
University of Geneva, Geneva, Switzerland. 6.00/6.00, 7.5 ECTS
MENTORS: Prof. François Bouchy, Angelika Psaridi, Marion Cointepas
DETAILS: Built calibration frames (bias and dark exposures, flat fields) to determine the optimum telescope configuration and gain for the Geneva Observatory's 60-cm Newtonian reflector, TELESTO.

PROJECT: **Hunting for High Redshift Dusty Star Forming Galaxies (DSFGs)** **Sep 2021 - Jan 2022**
University of Geneva, Geneva, Switzerland. 6.00/6.00, 7.5 ECTS
MENTORS: Dr. Laia Barrufet, Prof. Pascal Oesch, Dr. Josephine Kerutt
DETAILS: Used multiwavelength catalog COSMOS2020 and data from the Herschel Extragalactic Legacy Project to identify high redshift Dusty Star Forming Galaxies (DSFG) in order to constrain the obscured star formation rate density (SFRD).

THESIS: **Quantum Monte Carlo Methods for Spin Systems** **Aug 2020 - May 2021**
Ashoka University, Sonipat, India. 4.00/4.00, 16 credits
MENTOR: Prof. Somendra M. Bhattacharjee
DETAILS: Developed a code on Python to determine quantum critical points on hierarchical lattices using the Transverse Field Ising Model (TFIM) and stochastic Monte Carlo techniques.

UNDERGRADUATE RESEARCH

PROJECT: **Fast Transients with the upgraded GMRT** **May - Aug 2020**
National Centre for Radio Astrophysics (NCRA-TIFR), Pune, India.
PROGRAMME: Visiting Students' Research Programme (VSRP-2020)
MENTOR: Dr. Jayanta Roy
DETAILS: Conducted a population study of Pulsars, Rotating Radio Transients (RRATs) and Fast Radio Bursts (FRBs), and a parameter space study of an RRAT from archival GHRSS survey data from the GMRT telescope.

PROJECT: **Statistical Modes of Motion in Rat Exploratory Behaviour** **May - Jul 2019**
National Centre for Biological Sciences (NCBS-TIFR), Bangalore, India. MENTOR: Dr. Sumantra Chattarji

PROJECT: **Determining the Period of the Sunspot Cycle** **May - Jul 2018**
Tata Institute of Fundamental Research (TIFR) - Hyderabad, Hyderabad, India.
MENTOR: Dr. Prasad Perlekar

CODING ABILITIES

Python: Proficient, **LaTeX**: Proficient, **Unix**: Intermediate, **Mathematica**: Basic
SED-modelling (**MAGPHYS, BAGPIPES**): Proficient, Visual-analysis softwares (**Topcat, DS9, Aladin**): Proficient

LANGUAGES

English: Native, **Hindi**: Conversational, **Telugu**: Conversational

TEACHING EXPERIENCE

Teaching Assistant, *Ashoka University*, Sonipat, India. **Dec 2020 - Jan 2021**
COURSE: *Windows on the Universe*
COURSE INSTRUCTOR: Dr. Somak Raychaudhury (IUCAA-Pune)

Online Learning Associate, *Ashoka University*, Sonipat, India. **Jun 2020 - Jul 2020**
COURSE: *Measuring the Universe*
COURSE INSTRUCTOR: Dr. Somak Raychaudhury (IUCAA-Pune)

WORKSHOPS & SCHOOLS

Unraveling Galaxy Evolution with JWST, *IMPRS Summer School*, Heidelberg, Germany. **Sep 2023**

Python and Research (PyaR) Workshop, *Ashoka University*, Sonipat, India. **Oct - Nov 2018**

Amateur Astronomy Course, *B M Birla Science Centre*, Hyderabad, India. **Jan - Apr 2014**

EXTRACURRICULAR INTERESTS

Promotion of Physics & Astronomy Student Activities, *Ashoka Univeristy*

- Founder and Head, Astronomy Club. **2018 - 2020**
- Member, Physics Society Executive Committee. **2018 - 2020**
- Member, Physics Society Journal Club. Available *here*. **May - Aug 2020**

Panel Discussions/Moderating, *Ashoka Univeristy*

- Moderator, Why Study Physics at Ashoka? Available *here*. **Feb 2021**
- Panelist, Classes Online, Learning Offline: The Students Speak. Available *here*. **Jan 2021**
- Moderator, Using Data while Ensuring Privacy. Available *here*. **May 2020**
- Moderator, Blind (Wo)men and The Universe. Available *here*. **Apr 2020**

Member, The Feminist Collective, *Ashoka Univeristy* **2017 - 2018**

Endurance Running (21K) and Cycling (100K) **2013 - Present**

WRITING

Scholar Update, for the **Inlaks Shivdasani Foundation Blog**. Available *here*. **2022**

Ashoka University: A Guide for the Curious, for **Citizens of Science**. Available *here*. **2022**

For the **Ashoka Physics Journal**, *Ashoka Univeristy*

- *Early Hints of Dark Matter*. Available *here*. **2021**
- *Quantum Monte Carlo Methods for Spin Systems*. Available *here*. **2021**
- *The Strangest Man: A Book Review*. Available *here*. **2020**
- *The Sneeze Distribution!* Available *here*. **2020**