

Dhruba Dutta Chowdhury

Room 209, Ross Building, Edmond J. Safra Campus, Jerusalem, 9190401

dhruba.duttachowdhury@mail.huji.ac.il

ORCID: 0000-0003-0250-3827

Website: dhrubadc.github.io

Mobile: +972 058-667-8930

Nationality: Indian

RESEARCH INTERESTS

Black Holes, Dark Matter, Gas and Stellar Dynamics, Star Clusters

POSITIONS

**Center for Astrophysics and Planetary Science,
Racah Institute of Physics, The Hebrew University of Jerusalem, Israel** 2022-

- Postdoctoral Fellow (2024 -
- Israel Academy of Sciences and Humanities Postdoctoral Fellow (2022-2024)
- Advisors: Avishai Dekel and Nir Mandelker

Department of Physics, Presidency University, Kolkata, India 2015-2016

- Project Assistant (Junior Research Fellow)
- Project: Modeling the 21 cm Signal from the Dark Ages
- Advisor: Kanan Kumar Datta

EDUCATION

Yale University, New Haven, USA 2016-2022

- Ph.D., M.S., M.Phil. in Astrophysics
- Thesis: Constraining Dark Matter through Gravitational Heating and Cooling Processes
- Advisors: Frank van den Bosch and Pieter van Dokkum

Presidency University, Kolkata, India 2013-2015

- M.Sc. in Physics
- Thesis: The Sunyaev-Zel'dovich Signal from Quasar Host Halos
- Advisor: Suchetana Chatterjee

Presidency College, University of Calcutta, Kolkata, India 2010-2013

- B.Sc. (Honors) in Physics
- Minors in Mathematics and Chemistry

AWARDS

- Arnold Rosenblum Prize for Excellence in Research in Astrophysics, Hebrew University 2023
- Israel Academy of Sciences and Humanities Postdoctoral Fellowship 2022-2024
- Sheldon Wise Pre-Doctoral Fellowship, Yale University 2017-2018
- Junior Research Fellowship, Department of Science & Technology, India 2015-2016
- Lilabati Ray Memorial Prize for Best Student Seminar, Presidency University 2015
- INSPIRE scholarship, Department of Science & Technology, India 2010-2015

PROFESSIONAL ACTIVITIES

- Referee for ApJ 2019-Present
- Astro-ph Meeting Moderator, The Hebrew University of Jerusalem 2022-Present
- Yale Astronomy Graduate Student Talks SOC Member Spring 2019
- Galaxy Lunch Moderator, Yale Astronomy Department 2017-2018

TEACHING EXPERIENCE

- Guest Lecturer, Advanced Astrophysics II: Galaxies and Cosmology, Hebrew University Spring 2024
- Guest Lecturer, Advanced Astrophysics II: Galaxies and Cosmology, Hebrew University Spring 2023
- Teaching Fellow, Planets and Stars, Yale University Spring 2017
- Teaching Fellow, Galaxies and the Universe, Yale University Fall 2017, 2019

CONFERENCE TALKS

1. Cosmic Dawn Revealed by JWST: First Stars, Galaxies, and Black Holes, KITP, Santa Barbara Aug 2024
Dynamical Friction in Disks and Application to FFB Disks
2. Galaxy Formation Workshop, University of California, Santa Cruz Aug 2024
Dynamical Friction in Disks
3. Galaxy Formation Workshop, University of California, Santa Cruz Aug 2024
Radial Transport in High-Redshift Disks
4. Galaxy Formation Workshop, University of California, Santa Cruz Aug 2023
Radial Transport in High-Redshift Disks
5. 68th Israel Physical Society Meeting, Tel Aviv April 2023
Radial Transport in High-Redshift Disks
6. Galaxy Formation Workshop, University of California, Santa Cruz Aug 2022
Constraining Dark Matter with Gravitational Heating and Cooling Processes
7. Virtual Workshop on Very Light Dark Matter, Kavli IPMU, Kashiwa Sept 2021
On the Random Motion of Nuclear Objects in a Fuzzy Dark Matter Halo
8. Virtual Young Astronomers on Galactic Nuclei Meeting, Niels Bohr Institute, Copenhagen Sept 2021
On the Random Motion of Nuclear Objects in a Fuzzy Dark Matter Halo
9. Virtual 16th Marcel Grossmann Meeting July 2021
On the Random Motion of Nuclear Objects in a Fuzzy Dark Matter Halo
10. Virtual 238th American Astronomical Society Meeting June 2021
On the Random Motion of Nuclear Objects in a Fuzzy Dark Matter Halo
11. Epoch of Reionization Workshop, Indian Institute of Technology, Kharagpur July 2016
Imprints of the Recombination History of the Universe on the 21-cm Signal from the Dark Ages
12. Topical Conference on Gravity, Cosmology, Astronomy, and Astrophysics, IISER, Kolkata Sept 2015
Sunyaev-Zel'dovich Signal from Quasar Hosts: Implications for Quasar Feedback Detection

SEMINARS

1. State of the Universe Seminar, Tata Institute of Fundamental Research, India (**invited**) Apr 2023
2. Nature of Dark Matter on Small Scales Virtual Seminar (**invited**) Apr 2022
3. Galaxies and Cosmology Seminar, University of Texas at Austin, USA (**invited**) Nov 2021
4. Galaxy Coffee Talk, Max Planck Institute for Astronomy, Germany Nov 2021
5. Astro Lunch Seminar, Carnegie Mellon University, USA (**invited**) Nov 2021
6. Cosmology Group Meeting Talk, Canadian Institute for Theoretical Astrophysics, Canada Nov 2021
7. L2G2 Meeting Talk, Center for Computational Astrophysics, USA (**invited**) Nov 2021
8. Lunch Talk, Leiden Observatory, Netherlands Nov 2021
9. Lunch Talk, Carnegie Observatories, USA (**invited**) Nov 2021
10. Center for Astrophysics Seminar, Harvard University, USA (**invited**) Nov 2021
11. Cosmology Seminar, Max Planck Institute for Astrophysics, Germany Oct 2021
12. Thunch Talk, Princeton University, USA Oct 2021
13. CCAPP Seminar, Ohio State University, USA (**invited**) Oct 2021
14. Flash Talk, University of California, Santa Cruz, USA Oct 2021
15. Brown Bag Lunch Talk, Massachusetts Institute of Technology, USA Oct 2021
16. TAPIR Seminar, California Institute of Technology, USA (**invited**) Oct 2021
17. Cosmo Lunch Talk, The Hebrew University of Jerusalem, Israel (**invited**) Sep 2021
18. Physics Club Talk, Presidency University, India (**invited**) Jul 2019

INVITED COLLOQUIA

1. School of Astrophysics, Presidency University, Kolkata, India Sept 2022
2. Academia Sinica Institute for Astronomy and Astrophysics, Taipei, Taiwan Jan 2022
3. Department of Physics, Presidency University, Kolkata, India May 2019

CONFERENCE POSTERS

1. Santa Cruz Galaxy Workshop, University of California, Santa Cruz Aug 2019
On the Orbital Decay of Globular Clusters in NGC 1052-DF2
2. Small Galaxies, Cosmic Questions Conference, Durham University, Durham July 2019
On the Orbital Decay of Globular Clusters in NGC 1052-DF2

PUBLICATIONS [ADS]

Total: 11, Significant contributions: 8 (6 as lead author), 203 Citations, h-index = 8

Significant Contributions

1. Dekel, A., Stone, N., **Dutta Chowdhury, D.** et al. “Growth of Massive Black Holes in FFB Galaxies at Cosmic Dawn”, submitted to A&A, arXiv:2409.18605
(*ran and analyzed numerical simulations and contributed to writing*)
2. **Dutta Chowdhury, D.**, Dekel, A., Mandelker, N., Ginzburg, O., and Genzel, R. “Radial Transport in High-Redshift Disk Galaxies Dominated by Inflowing Streams”, submitted to A&A, arXiv:2409.01589
3. **Dutta Chowdhury, D.**, van den Bosch F.C., van Dokkum, P., Robles, V.H., Schive H. et al. “On the Dynamical Heating of Dwarf Galaxies in a Fuzzy Dark Matter Halo”, 2023, ApJ, 949, 68
4. **Dutta Chowdhury, D.**, van den Bosch, F.C., Robles, V.H., van Dokkum, P., Schive, H. et al. “On the Random Motion of Nuclear Objects in a Fuzzy Dark Matter Halo” 2021, ApJ, 916, 27
5. **Dutta Chowdhury, D.**, van den Bosch, F.C., and van Dokkum, P. “On the Evolution of the Globular Cluster System in NGC 1052-DF2: Dynamical Friction, Globular-Globular Interactions, and Galactic Tides” 2020, ApJ, 903, 149
6. **Dutta Chowdhury, D.**, van den Bosch, F.C., and van Dokkum, P. “On the Orbital Decay of Globular Clusters in NGC 1052-DF2: Testing a Baryon Only Mass Model” 2019, ApJ, 877, 133
7. Ansar, S., Datta, K.K. and **Dutta Chowdhury, D.** “Impact of Inhomogeneous CMB Heating of Gas on the HI 21-cm Signal During Dark Ages” 2018, PhysRevD, 98, 103505
(*initiated the study and did a portion of the analytical calculations*)
8. **Dutta Chowdhury, D.** and Chatterjee, S. “Sunyaev-Zel’dovich Signal from Quasar Hosts: Implications for Detection of Quasar Feedback” 2017, ApJ, 839, 34

Collaboration Papers

9. van Dokkum P. et al. including **Dutta Chowdhury D.** [11 total] “Monochromatic globular clusters as a critical test of formation models for the dark matter deficient galaxies NGC1052-DF2 and NGC1052-DF4” 2022, ApJL, 940, L9
10. van Dokkum P. et al. including **Dutta Chowdhury D.** [11 total] “A trail of dark-matter-free galaxies from a bullet-dwarf collision” 2022, Nature, 605, 435
11. Shen Z. et al. including **Dutta Chowdhury D.** [10 total] “A Tip of the Red Giant Branch Distance of 22.1 ± 1.2 Mpc to the Dark Matter Deficient Galaxy NGC 1052-DF2 from 40 Orbits of Hubble Space Telescope Imaging” 2021, ApJL, 914, L12

COMPUTATIONAL SKILLS

- N-Body simulations with GADGET-2 and GADGET-4
- Fuzzy Dark Matter simulations with GAMER-2 (AMR Code)
- Programming skills in C, C++, FORTRAN 77, and Python
- Post processing and analysis of Hydro-Cosmological Simulations