

Alankar Dutta

Graduate student



alankardutta.com



dutta-alankar



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Skills

- Good grasp on fundamentals of Physics.
- Have fair amount of knowledge on numerical methods and computation.
- Can code proficiently in Python, C and C++.
- Have decent mathematical skills required for addressing applied problems.
- Fluent in Bengali, English and Hindi. Knows A1 level German.

Other interests

- Watching and playing Cricket
- Learning language
- Travelling

References



Prateek Sharma

Associate Professor,
Indian Institute of Science,
Bangalore, India



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Suchetana Chatterjee

Assistant Professor,
Presidency University,
Kolkata, India



suchetana.physics@presiuniv.ac.in

About

I am an Integrated PhD (Masters+PhD) student at Indian Institute of Science, Bangalore, India. I have finished my masters coursework and am currently working in Computational Astrophysics, especially on the study of multiphase gas in the Circumgalactic medium. I have a fair amount of knowledge on the fundamentals of Physics which I have acquired in the past six years as a part of my undergraduate and masters coursework at Presidency University and at IISc (Indian Institute of Science).

Education

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|-------------|---|-------------------------------|
| 2017 - | Masters + Ph.D.
Bangalore, India
Specialization: Astrophysics
<i>Advisor: Prateek Sharma</i> | Indian Institute of Science |
| 2014 - 2017 | Bachelor of Science (Undergraduate)
Kolkata, India
Specialization: Physics
<i>Bachelor Thesis Advisor: Suchetana Chatterjee</i> | Presidency University |
| 2000 - 2014 | ICSE & ISC (Junior & Senior School)
Kolkata, India | Ram Mohan Mission High School |

Research Experience

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|-------------|---|-----------------------------|
| 2017 - | Graduate student in Astrophysics | Indian Institute of Science |
| | <ul style="list-style-type: none">• I am currently working on hydrodynamic simulations of Circumgalactic environments.• I am building various idealized models to explain observations of cold gas in hot galactic outflows.• I am also interested in understanding the detailed dynamics and morphology of cold clouds in CGM.• I am also working on developing various CLOUDY based models of collisional as well as photo-ionized plasmas observed in CGM and other related models aiming to connect simulations with observations (CLOUDY: https://www.nublado.org/). | |
| 2014 - 2017 | Undergraduate in Physics | Presidency University |
| | <ul style="list-style-type: none">• I worked briefly in developing synthetic light curves for exoplanet detection using the Transit method.• I worked on developing a Markov Chain Monte Carlo (MCMC) technique for analyzing and fitting different Halo Occupation Distribution (HOD) models with observational data having two dimensional correlated noise.• I studied the environment around supermassive blackholes and developed X-ray emission maps from Gadget simulation data of Massive Black II simulation. | |

Conferences, Schools and Research visits

May 2019	Max Planck Institute for Astrophysics	Garching bei München, Germany	<ul style="list-style-type: none">I was a visiting Graduate student for approximately three months.
Jan 2019	Cosmology: The Next Decade	International Centre for Theoretical Sciences (ICTS), Bangalore, India	
Feb 2020	Astronomical Society of India Meeting	ASI 2020, IISER Tiupati, India	<ul style="list-style-type: none">Presented a poster titled Fate of cold clouds in hot galactic outflows.
Jan 2021	KITP Program: Fundamentals of Gaseous Halos	Kavli Institute for Theoretical Physics, USA	<ul style="list-style-type: none">Attended talks and engaged in discussions with leading experts in the field of Astrophysical simulations. Ideas discussed here lead to an eventual publication.
Mar 2022	Astronomical Society of India Meeting	ASI 2022, IIT Roorkee, India	<ul style="list-style-type: none">Presented a poster titled Cooling flows around cold clouds in the Circumgalactic medium.

Publications

- Cooling flows around cold clouds in the circumgalactic medium: steady-state models & comparison with TNG50**, Dutta, Alankar; Sharma, Prateek; Nelson, Dylan (ArXiv: 2107.02722; submitted to MNRAS)
- Growth and structure of multiphase gas in the cloud-crushing problem with cooling**, Kanjilal, Vijit; Dutta, Alankar; Sharma, Prateek (DOI: 10.1093/mnras/staa3610 published in the Monthly Notices of the Royal Astronomical Society)
- On modelling CC85 wind in an expanding local box**, Dutta, Alankar; Sharma, Prateek (DOI: 10.3847/2515-5172/ab4bd8 published in Research Notes of the AAS)
- Mean Occupation Function of High Redshift Quasars from the Planck Cluster Catalog**, Chakraborty, Priyanka; Chatterjee, Suchetana; Dutta, Alankar; Myers, Adam D. (DOI: 10.1088/1538-3873/aaab3e published in the Publications of the Astronomical Society of the Pacific)
- Undergraduate Thesis: **X-ray Environments of Supermassive Black Holes** (DOI: 10.13140/RG.2.2.26190.97606)