

# PRANJAL RALEGANKAR

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Citizenship: Indian

## WORK EXPERIENCE

### Postdoctoral Scientist

Institute of Advanced Studies (SISSA), Trieste

Oct. 2022 – present

## EDUCATION

### Doctor of Philosophy | *Particle Physics and Cosmology*

University of Illinois at Urbana Champaign

Advisors: Jessie Shelton and Peter Adshead

Aug. 2017 – Aug. 2022

### Master of Science | *Quantum fields and fundamental forces*

Imperial College London

Dissertation Advisor: Carlo Contaldi

Qualification: **Distinction**

Oct. 2016 – Sep. 2017

### Bachelor of Technology | *Mechanical Engineering* | *Minor in Physics*

Indian Institute of Technology Bombay

Jul. 2012 – May 2016

## HONORS AND AWARDS

### Dissertation completion Fellowship, UIUC

18 students selected across all departments for full scholarship to support last year of PhD.

2021-2022

### University Research Fellowship, UIUC

Fellowship for outstanding recent research accomplishments.

2021

### Mavis Future Faculty Fellowship, UIUC

Provides a series of workshops, seminars and activities to prepare fellows for an academic career.

2020-2021

### Imperial India Foundation Fellowship

2 students selected from all Indian applicants for full Scholarship to pursue Masters at Imperial College London.

2016-2017

### DAAD WISE scholarship

Scholarship for pursuing summer research internship in Germany.

2015

## PUBLICATIONS

\* denotes papers with primary authorship.

\*Pranjal Ralegankar, Daniele Perri, Takeshi Kobayashi “Gravothermalizing into primordial black holes, boson stars, and cannibal stars”, [arXiv:2410.18948](https://arxiv.org/abs/2410.18948).

\*Pranjal Ralegankar, Enrico Garaldi, Matteo Viel “Matter power spectrum induced by primordial magnetic fields: from the linear to the non-linear regime”, [arXiv:2410.02676](https://arxiv.org/abs/2410.02676).

\*Pranjal Ralegankar, Mak Pavičević, Matteo Viel “Primordial magnetic fields: consistent initial conditions and impact on high- $z$  structures”, *JCAP* 07 (2024) 027, [arXiv:2402.14079](https://arxiv.org/abs/2402.14079).

\*Pranjal Ralegankar. “Dark Matter Minihalos from Primordial Magnetic Fields”, *Phys. Rev. Lett.* **131** (2023) 23, 231002, [arXiv:2303.11861](https://arxiv.org/abs/2303.11861).

\*Peter Adshead, Pranjal Ralegankar, and Jessie Shelton. “Dark radiation constraints on portal interactions with hidden sectors”, [JCAP09\(2022\)056](#), [arXiv:2206.13530](#).

\*Adrienne L. Erickcek, Pranjal Ralegankar, and Jessie Shelton. “Cannibalism’s lingering imprint on the matter power spectrum”, [JCAP01\(2022\)017](#), [arXiv:2106.09041](#).

\*Adrienne L. Erickcek, Pranjal Ralegankar, and Jessie Shelton. “Cannibal domination and the matter power spectrum”, [Phys. Rev. D 103, 103508 \(2021\)](#), [arXiv:2008.04311](#).

\*Peter Adshead, Gilbert Holder, and Pranjal Ralegankar. “BBN constraints on dark radiation isocurvature”, *Journal of Cosmology and Astrophysics* [JCAP09\(2020\)016](#), [arXiv:2006.01165](#).

\*Peter Adshead, Pranjal Ralegankar, and Jessie Shelton. “Reheating in two-sector cosmology”, *Journal of High Energy Physics* [JHEP08\(2019\)151](#), [arXiv:1906.02755](#).

Jatan Buch, Pranjal Ralegankar, and Vikram Rentina. “Late decaying 2-component dark matter scenario as an explanation of the AMS-02 positron excess”, *Journal of Cosmology and Astrophysics* [JCAP10\(2017\)028](#), [arXiv:1609.04821](#).

## SEMINARS

LBNL Berkeley	11th Sep. 2024
IAS Princeton	9th Sep. 2024
University of Maryland, College Park	4th Sep. 2024
John Hopkins Baltimore	3rd Sep. 2024
Majorana-Raychaudhuri online Seminar	5th Apr. 2024
University of Milan Bicocca	25th Mar. 2024
Copernicus webinar	5th Mar. 2024
IUCAA Pune	17th Jan. 2024
IIT Mumbai	19th Dec. 2023
Geneva observatory	30th May. 2023
TIFR Mumbai	16th Sep. 2022
IISER Pune	8th Sep. 2022
IIT Bombay	25th Aug. 2021
IACS Kolkata	21st July 2021

## CONFERENCES, COLLOQUIUMS, AND SUMMER SCHOOLS

TeVPA, Chicago	29th Aug. 2024
New Horizons in Primordial Black Hole physics, Edinburgh	19th Jun. 2024
Generation, evolution, and observations of cosmological magnetic fields, Lausanne	14th May 2024
TeVPA 2023, Napoli	12th Sep. 2023
Cosmic magnetism in voids and filaments, Bologna	26th Jan. 2023
N3AS summer school, UCSC	1st Aug. 2022
Interconnections between Particle physics cosmology, St Louis	8th Jun. 2022
KICP colloquim, Chicago	13th May 2022
Pheno Conference, U. Pittsburgh	10th May 2022

Brookhaven Forum 2021, virtual	4th Nov. 2021
Poster presentation, COSMO conference	2nd-7th Aug. 2021
Cosmology from Home conference	25th Aug. 2020
Theoretical Advanced Study Institute (TASI) student talk	16th Jun. 2020

## TEACHING EXPERIENCE

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Petnica summer school lecturer on early universe cosmology	Aug. 2024
Teaching assistant for Particle Physics (graduate level)	Spring 2020, Spring 2021
Teaching assistant for Particle physics of the early universe (graduate level)	Fall 2020
Teaching assistant for Quantum Physics (senior level)	Fall 2017, Spring 2018, Fall 2018
Teaching assistant for Modern physics (freshman level)	Spring 2019, Fall 2019

## OUTREACH

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SISSA for School	Jan 2023 – Ongoing
Illinois GPM (Graduate Peer Mentoring) mentor	Aug. 2018 – May 2020
Illinois GPS (Guidance for Physics Students) mentor	Jan. 2018 – May 2019

## REFERENCES

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<b>Prof. Jessie Shelton</b> email: <a href="mailto:sheltonj@illinois.edu">sheltonj@illinois.edu</a> Relationship: PhD Advisor	University of Illinois at Urbana Champaign
<b>Prof. Peter Adshead</b> email: <a href="mailto:adshead@illinois.edu">adshead@illinois.edu</a> Relationship: PhD Advisor	University of Illinois at Urbana Champaign
<b>Prof. Adrienne Erickcek</b> email: <a href="mailto:erickcek@physics.unc.edu">erickcek@physics.unc.edu</a> Relationship: Senior collaborator on two papers	University of North Carolina at Chapel Hill
<b>Prof. Matteo Viel</b> email: <a href="mailto:viel@sissa.it">viel@sissa.it</a> Relationship: Collaborator during my postdoc	SISSA, Trieste
<b>Prof. Takeshi Kobayashi</b> email: <a href="mailto:tkobayas@sissa.it">tkobayas@sissa.it</a> Relationship: Collaborator during my postdoc	SISSA, Trieste