C.V   DIGVIJAY (JAY) WADEKAR

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EDUCATION

New York University (NYU) — New York, NY   *September 2021 (Expected)*
Ph.D. alongside MS & M.Phil in Astrophysics   GPA: 3.89/4.0

Indian Institute of Technology, Bombay (IITB)—Mumbai, India   *August 2015*
B.Tech (Bachelor of Technology) in Engineering Physics with Honors in Physics

PEER REVIEWED JOURNAL PUBLICATIONS

Comment on "Calorimetric Dark Matter Detection with Galactic Center Gas Clouds"
G. Farrar , F. Lockman, N. McClure-Griffiths, **D. Wadekar**   PRL 124, 029001 (2020)

Zeldovich pancakes at redshift zero: the equilibration state and phase space properties.
D. Wadekar, *S. Hansen* [arXiv:1411.6627]   MNRAS 447,1337 (2015)

Variance Adaptation in Navigational Decision Making
R. Gepner, J. Wolk, **D. Wadekar**, *S. Dvali, M. Gershow*   eLife (2018); 7:e37945

SUBMITTED MANUSCRIPTS

HInet: Generating neutral hydrogen from dark matter with neural networks
D. Wadekar, *F. Villaescusa-Navarro, S. Ho, L. Perreault-Levasseur*   Submitted to ApJ
[arXiv:2007.10340]

The Galaxy Power Spectrum Multipoles Covariance in Perturbation Theory
D. Wadekar, *R. Scoccimarro* [arXiv:1910.02914]   Submitted to PRD

First direct astrophysical constraints on dark matter interactions with ordinary matter at very low velocities
D. Wadekar, *G. Farrar* [arXiv:1903.12190]   Submitted to PRL

TALKS

Cosmology seminar, TIFR, Mumbai, India **(invited)**   December 2019

Princeton/IAS Cosmology Lunch Talk , Princeton, NJ **(invited)**   December 2019

Cosmology seminar, UC Berkeley, CA **(invited)**   October 2019

Workshop on dynamics of LSS formation, MIAPP, Garching, Germany **(invited)**   July 2019

BCCP workshop: Spectroscopic surveys, UC Berkeley, CA (Contributed)   January 2020

April Meeting of the American Physical Society(APS), Denver, CO (contributed)   April 2019
DAP travel award (600$) & DGRAV travel award (300$)

April Meeting of the American Physical Society(APS), Columbus, OH (contributed)   April 2018
DAP travel award (600$)

Pheno & Vino seminar presentation, NYU (contributed)   March 2017

NYU, AMNH & CUNY Astrofest, NYU (contributed)   October 2019

AWARDS & HONORS
- **James Arthur Dissertation Fellowship** at NYU, 2019-current
- **Henry Mitchell McCracken Fellowship** at NYU, 2015-19
- **All India Rank 139** in IIT-JEE 2011 exam (**99.97 percentile**) among 485,000 candidates.

- **KVPY fellowship** (Kishore Vaigynaik Protsahan Yojana) by the Govt. of India (declined)
- **NTSE fellowship** (National Talent Search Examination) by the Govt. of India.
- Scored **990/990** in the subject GRE in Physics.
- Among **top 30** students selected from all over India to attend Orientation cum Selection Camp (OCSC) for International Olympiad on Astronomy and Astrophysics (IOAA) and International Junior Science Olympaid (IJSO), after clearing two nationwide examinations participated in by more than 15000 students.

POSTERS	Max Planck Institute for Astrophysics, Berlin, Germany	July 2018
	NYU, AMNH & CUNY Astrofest, NYU	October 2018

SELECTED PROJECTS   Analytic covariance of the redshift-space galaxy power spectrum & bispectrum
Guide : Prof. Roman Scoccimarro, NYU   *Spring 2016- Current*
We provide a new robust analytic method to compute the covariance matrix of galaxy redshift-space power spectrum. Our method is five orders of magnitude faster than traditional techniques which require simulating a large number of expensive mock simulations. We are now trying to generalize our technique to calculate covariance of redshift-space bispectrum, which is computationally intractable using mock simulations.

Constraints on interactions of Dark Matter with ordinary matter using astrophysical systems
Guide : Prof. Glennys Farrar, NYU   *Summer 2016- Current*
We require that the heating/cooling due to DM interacting with gas in the Leo T dwarf galaxy cannot exceed the radiative cooling rate of the gas. We thus derive strong limits on the charge of DM and on kinematic mixing strength of dark photons.

TEACHING
EXPERIENCE
- Teaching Assistant(TA) at NYU for the undergraduate course Mathematical Physics *Spring 2018*
- TA at NYU for the undergraduate course Electricity & Magnetism- I   *Fall 2016*
- TA at IITB for the undergraduate course Electromagnetism   *Spring 2015*

TECHNICAL SKILLS
- *Programming:* C/C++, Python, Mathematica, FORTRAN77
- *Operating Systems:* Linux, Windows, Mac
- Working knowledge of Pytorch, scikit-learn

MENTORSHIP AND
OUTREACH
- *Academic Mentorship*:   *Fall 2014*
  Tutored academically weak students at IIT Bombay in complex analysis and differential equations. Mentored two students in the physics department and helped them in clearing their backlogs.
- *Astronomy Club*:   *2011-12*
  Gave talks on future of astronomy at IIT Bombay which were open to the general public. I also headed a project in collaboration with the club to build a Solar Radio Telescope from scratch.

REFERENCES
- *Prof. Roman Scoccimarro* (PhD Thesis advisor)   rs123@nyu.edu
- *Prof. Glennys Farrar* (Project advisor)   gf25@nyu.edu
- *Prof. Steen H. Hansen* (Project advisor)   hansen@dark-cosmology.dk

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