Dhruv Muley

Curriculum vitae

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Education

B.A. Physics, B.A. Astrophysics, University of California, Berkeley 2016—2020 *(projected)*
Major GPA: *3.861* · Overall GPA: *3.845* · *Honors to Date*

Research Interests numerical hydrodynamics, exoplanets/protoplanetary disks, galaxy evolution

Relevant Coursework ***Undergraduate:*** Statistical and Thermal Physics, Quantum Mechanics I-II, Classical Mechanics, Mathematical Methods in Physics, Stellar Physics

Graduate: General Relativity, Radiative Processes in Astrophysics, Classical Electrodynamics, Geophysical and Astrophysical Fluid Dynamics, *Galaxies*

Italics denote in-progress coursework.

Publications

1. **Muley, Dhruv**; Wheeler, Coral; Hopkins, Philip; *et al.* "Time-dependent stellar yields in FIRE (working title)," *Monthly Notices of the Royal Astronomical Society* (in prep.)
2. Fung, Jeffrey; **Muley, Dhruv**. "A staggered semi-analytic method for simulating dust grains subject to gas drag," *The Astrophysical Journal Supplement Series*, 244, 2 (2019; ArXiv:1909.02006)
3. **Muley, Dhruv**; Fung, Jeffrey; van der Marel, Nienke. "PDS 70: A transition disk sculpted by a single planet," *The Astrophysical Journal Letters*, 879, 1 (2019; ArXiv:1902.07191)

Research

SURF Fellow, California Institute of Technology 2019—
Advisor: Dr. Coral Wheeler, Prof. Philip F. Hopkins
Implementing yields and event rates for supernovae and stellar winds, from the NuGrid suite, into the GIZMO hydrodynamical code. Subsequently, running simulations to better constrain absolute and relative abundances of metals in dwarf galaxies. Caltech SURF fellowship award was $6350 in 2019.

Undergraduate Researcher, University of California, Berkeley 2018–19
Advisor: Dr. Jeffrey Fung
Studied the morphology of the PDS 70 transition disk with the GPU-hydrodynamics code PEnGUIn. Subsequently, helped devise an improved method for integrating the trajectories of dust grains (e.g., in disks) subject to gas drag.

Affiliate, Lawrence Berkeley National Laboratory 2017–18
Advisor: Dr. Carlton Pennypacker

Undergraduate Researcher, Columbia University (remote) 2016
Advisor: Prof. David Kipping

Technical Skills

Advanced	Python, C/C++, Unix
Intermediate	CUDA, Java, Mathematica, LaTeX
Basic	HTML, JavaScript, Photoshop, MPI

Teaching

Reader, Physics 137B, University of California, Berkeley 2019
Instructor: Prof. Michael Crommie
Graded roughly 60 homework assignments biweekly for Physics 137B, the second semester of upper division quantum mechanics at Berkeley, during Spring 2019.

Undergraduate Student Instructor, Astronomy C10, University of California, Berkeley 2018
Instructor: Prof. Alex Filippenko
Ran weekly discussion sections, devised worksheets and study materials, and graded exams for approximately 60 students in Astronomy C10, UC Berkeley's survey course on astronomy for non-majors, during the Fall 2018 semester.

Reader, Astronomy C10, University of California, Berkeley 2017
Instructor: Prof. Alex Filippenko
Graded roughly 100 homework assignments per week for Astronomy C10.

Talks and Conferences

1. "PDS 70: A laboratory for disk-planet interaction" (upcoming) November 22, 2019
   Talk at Bay Area Planetary Science Meeting (Stanford)
2. **Discussion leader** at ExoCoffeeTea exoplanet journal club (UC Berkeley) September 25, 2019
3. "PDS 70: A transition disk sculpted by a single planet" February 14, 2019
   Talk at Astronomy Thursday Lunch (UC Berkeley)

Outreach

Member, Undergraduate Astrophysics Service Committee, University of California, Berkeley 2019—
Advisor: Amber Banayat, Prof. Mariska Kriek
Helped improve recruitment and retention of astrophysics majors.

Mentor, Be a Scientist program, Martin Luther King Jr. Middle School, Berkeley 2018
Advisor: Darlene Yan
Worked with students in Berkeley aged 11-14 to develop scientifically testable hypotheses, devise and conduct experiments, and analyze results.

Languages

English	Fluent; professional working proficiency
Spanish	Professional working proficiency
Marathi	Basic

References

Available upon request.