Dhruv Muley

Curriculum vitae

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Education

B.A. Physics, B.A. Astrophysics, University of California, Berkeley 2016—2020 *(projected)*
Major GPA: *3.868* · Overall GPA: *3.845* · *Honors to Date*

Research Interests computational fluid dynamics, extrasolar planets, protoplanetary disks

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

Italics denote in-progress coursework.

Publications

1. **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 an improved sub-grid stellar evolution model into the GIZMO hydrodynamics code.

Undergraduate Researcher, University of California, Berkeley 2018—
Advisor: Dr. Jeffrey Fung
Devised a model to explain the observed morphology of the transition disk PDS 70, and tested it with the GPU-hydrodynamics code PEnGUIn. Subsequently, adding two-fluid dust-gas dynamics to PEnGUIn to investigate other topics in disk dynamics.

Affiliate, Lawrence Berkeley National Laboratory 2017–18
Advisor: Dr. Carlton Pennypacker
Studied theoretical/computational models for the production and destruction of interstellar dust across cosmological time.

Undergraduate Researcher, Columbia University (remote) 2016
Advisor: Prof. David Kipping
Simulated transits of extrasolar moons in circumbinary systems, as well as the the transit-timing variation (TTV) and transit-duration variation (TDV) they would induce in host planets, and analyzed data from the *Kepler* space telescope to compare.

Technical Skills

Advanced	Python, Unix
Intermediate	C++, 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

"PDS 70: A transition disk sculpted by a single planet," *UC Berkeley Astronomy Lunch Talk* 2019

Outreach

Member, Undergraduate Astrophysics Service Committee, University of California, Berkeley 2019—
Advisor: Amber Banayat, Prof. Mariska Kriek
Devised plans to 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.