# Dhruv Muley

## Curriculum vitae

*December 2019*

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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** ***Undergrad-level:*** Statistical and Thermal Physics, Quantum Mechanics I-II, Classical Mechanics, Mathematical Methods in Physics, Stellar Physics

***Grad-level:*** 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
Implemented progenitor-dependent yields and event rates for supernovae and stellar winds, from the NuGrid suite, into the GIZMO hydrodynamics code. Currently running simulations to measure the resulting changes in metal abundances in dwarf galaxies, *with a paper in prep.* 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

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

## Talks and Conferences

1. "PDS 70: A laboratory for disk-planet interaction" November 22, 2019
   **Oral talk** (main presenter) 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
   **Oral talk** (main presenter) at Astronomy Thursday Lunch (UC Berkeley)

## 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.

## 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

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|---|---|
| **English** | Fluent; professional working proficiency |
| **Spanish** | Professional working proficiency |
| **Marathi** | Basic |