

# DHRUV MULEY

## CURRICULUM VITAE

September 2019

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## EDUCATION

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**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** 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  
*Stellar Dynamics and Galactic Structure*  
*Italics denote in-progress coursework.*

## PUBLICATIONS

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1. Fung, Jeffrey; **Muley, Dhruv**. “A staggered semi-analytic method for simulating dust grains subject to gas drag,” *The Astrophysical Journal Supplement Series*; (2019, submitted; ArXiv:1909.02006)
2. **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

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**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 Nu-Grid suite, into the GIZMO hydrodynamical code. Subsequently, running simulations to better constrain absolute and relative abundances of metals in dwarf galaxies.

**Undergraduate Researcher**, University of California, Berkeley 2018–19  
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, helped devise an improved method for integrating the trajectories of dust grains (e.g., in disks) subject to gas drag.

<b>Affiliate</b> , Lawrence Berkeley National Laboratory Advisor: Dr. Carlton Pennypacker	2017–18
<b>Undergraduate Researcher</b> , Columbia University (remote) Advisor: Prof. David Kipping	2016

## TECHNICAL SKILLS

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<b>Advanced</b>	Python, C/C++, Unix
<b>Intermediate</b>	CUDA, Java, Mathematica, L <sup>A</sup> T <sub>E</sub> X
<b>Basic</b>	HTML, JavaScript, Photoshop, MPI

## TEACHING

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<b>Reader</b> , Physics 137B, University of California, Berkeley 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.	2019
<b>Undergraduate Student Instructor</b> , Astronomy C10, University of California, Berkeley 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.	2018
<b>Reader</b> , Astronomy C10, University of California, Berkeley Instructor: Prof. Alex Filippenko Graded roughly 100 homework assignments per week for Astronomy C10.	2017

## TALKS AND CONFERENCES

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“PDS 70: A transition disk sculpted by a single planet,” <i>UC Berkeley Astronomy Lunch Talk</i>	2019
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## OUTREACH

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<b>Member</b> , Undergraduate Astrophysics Service Committee, University of California, Berkeley Advisor: Amber Banayat, Prof. Mariska Kriek Devised plans to improve recruitment and retention of astrophysics majors.	2019—
<b>Mentor</b> , Be a Scientist program, Martin Luther King Jr. Middle School, Berkeley Advisor: Darlene Yan Worked with students in Berkeley aged 11-14 to develop scientifically testable hypotheses, devise and conduct experiments, and analyze results.	2018

## LANGUAGES

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

## REFERENCES

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Available upon request.