DHRUV MULEY

Curriculum vitae

September 2019

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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 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

- 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* (2019, accepted; 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 Nu-Grid 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

Advisor: Dr. Carlton Pennypacker

2017-18

Undergraduate Researcher, Columbia University (remote)

2016

Advisor: Prof. David Kipping

TECHNICAL SKILLS

 $\textbf{Advanced} \qquad \quad \text{Python, C/C++, Unix} \\$

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

"PDS 70: A transition disk sculpted by a single planet"
 Talk at UC Berkeley Astronomy Thursday Lunch

February 14, 2019

OUTREACH

 ${\bf Member},\ {\bf University}\ {\bf of}\ {\bf California},\ {\bf Berkeley}$

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

2019—

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.