

DR. EKTA PATEL

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(US Citizen)

Research interests: Near-field cosmology, satellite galaxies, dwarf galaxies, computational astrophysics

APPOINTMENTS

Miller Fellow August 2019 - Present
Miller Institute for Basic Research in Science, UC Berkeley

EDUCATION

University of Arizona, Tucson, AZ
M.S., Ph.D. in Astronomy & Astrophysics 2014 - 2019
Thesis: *Dynamics of Local Group Satellite Galaxies in the Era of Precision Astrometry*
Advisor: Dr. Gurtina Besla

New York University, New York, NY
B.A. in Physics (with Honors) and minors in Astronomy and Mathematics 2010 - 2014
Senior Honors Thesis: *The Sloan Digital Sky Survey Large Galaxy Atlas*
Advisor: Dr. David Hogg

FELLOWSHIPS, HONORS, AND AWARDS

- 2019 - Present: Miller Research Fellow
- 2019: Raynor L. Duncombe Student Research Prize
- 2018: Academy of Tucson High School Keynote Speaker
- 2016 - 2019: National Science Foundation Graduate Research Fellowship Recipient
- 2016: University of Arizona College of Science Service Award Recipient
- 2015: Ford Foundation Pre-Doctoral Fellowship Honorable Mention and Alternate Candidate
- 2014: Sigma Pi Sigma National Physics Honors Society Initiate
- 2012: NYU Dean's Undergraduate Research Fund Recipient
- 2011 - 2014: NYU Presidential Honors Scholar
- 2011 - 2014: NYU Women in Science Scholar and Marilyn Miles Scholarship Recipient

PUBLICATIONS

10 refereed journal articles (5 first author, 3 second/third author)

10. *HST Proper Motions of NGC 147 and NGC 185: Orbital Histories and Tests of a Dynamically Coherent Andromeda Satellite Plane*
Sohn, S.T., **Patel, E.**, et al., 2020, accepted to ApJ
9. *The Orbital Histories of Magellanic Satellites Using Gaia DR2 Proper Motions*
Patel, E. et al., 2020, ApJ, 893, 121
8. *Asymmetric Drift of Andromeda Analogs in the Illustris Simulations*
Quirk, A. & **Patel, E.**, 2020, MNRAS, 497, 28702882
7. *ΛCDM Predictions for the Satellite Population of M33*
Patel, E., Carlin, J., Tollerud, E., Collins, M., Dooley, G., 2018, MNRAS, 480, 1883-1897

6. *First Gaia Dynamics of the Andromeda System: DR2 Proper Motions, Orbits, and Rotation of M31 and M33*
van der Marel, R. P., Fardal, M., Sohn, S.T., **Patel, E.**, et al., 2019, ApJ, 872, 24
5. *The Frequency of Dwarf Galaxy Multiples at Low Redshift in SDSS vs. Cosmological Expectations*
Besla, G., Patton, D., Stierwalt, S., Rodriguez-Gomez, V., **Patel, E.**, et al., 2018, MNRAS, 480, 3376-3396
4. *Estimating the Mass of the Milky Way Using the Ensemble of Classical Satellite Galaxies*
Patel, E., Besla, G., Mandel, K., Sohn, S.T., 2018, ApJ, 857, 78-94
3. *Space Motions of the Dwarf Spheroidal Galaxies Draco and Sculptor Based on HST Proper Motions with ~ 10 Year Base-Line*
Sohn, S.T., **Patel, E.**, et al., 2017, ApJ, 849, 93-107
2. *The Orbits of Massive Satellite Galaxies - II. Bayesian Estimates of the Milky Way and Andromeda masses using high precision astrometry and cosmological simulations*
Patel, E., Besla, G., Mandel, K., 2017, MNRAS, 468, 3428-3449
1. *The Orbits of Massive Satellite Galaxies - I. A Close Look at the Large Magellanic Cloud and a New Orbital History for M33*
Patel, E., Besla, G., Sohn, S.T., 2017, MNRAS, 464, 3825-3849

Other

1. *Construction of an L_* Galaxy: the Transformative Power of Wide Fields for Revealing the Past, Present and Future of the Great Andromeda System*
Gilbert, K., ..., **Patel, E.**, et al., 2019, Astro2020: Decadal Survey on Astronomy and Astrophysics, Bulletin of the American Astronomical Society, Vol. 51, Issue 3, id. 540

CONFERENCES AND TALKS

Invited: 10

- IAS Seminar, October 2020
- Rutgers Astrophysics Seminar, September 2020
- UC Berkeley Astronomy Colloquium, September 2020
- Las Cumbres Observatory Seminar, March 2020
- Division of Dynamical Astronomy (Duncombe Student Research Prize Talk), June 2019
- CCAPP Seminar, Ohio State University, November 2018
- Department Lunch Talk, UC Berkeley Astronomy Department, October 2018
- Astrophysics Seminar, American Museum of Natural History Astronomy Department, October 2018
- PHAT Collaboration Team Meeting, Ringberg Castle, July 2018
- 232nd AAS Meeting Press Conference, Denver, CO, June 2018

Contributed: 9

- The Local Group: Assembly and Evolution, STScI, September 2020
- Bay Area Local Group Meeting, Kavli Institute/SLAC, November 2019
- Small Galaxies, Cosmic Questions, Durham, UK, July 2019
- 232nd AAS Meeting, Milky Way Session 402, Denver, CO, June 2018
- Large Surveys of the Great Andromeda Galaxy, Lorentz Center, July 2017
- Marc Aaronson Symposium, University of Arizona, April 2017
- Local Group Astrostatistics Conference, University of Michigan, poster presentation, June 2015

- Midwest Conference for Undergraduate Women in Physics, University of Chicago, poster presentation, January 2014
- Dean's Undergraduate Conference, New York University, poster presentation, April 2013, *Best in team poster presentation*

Other: 7

- Lamat Program (UC Santa Cruz), *Meetings of the Minds*, June 2020
- Department Lunch Talk, UC Berkeley Astronomy Department, December 2019
- ExGal Seminar, University of Texas at Austin, April 2018
- JILA Seminar, JILA Institute/University of Colorado, December 2017
- Galaxies Lunch Seminar, Columbia University, October 2017
- Galaxy Club, Space Telescope Science Institute, December 2016
- FLASH Talk, National Optical Astronomy Observatory, November 2016

TELESCOPE TIME AWARDED

As Co-Investigator:

- **HST Cycle 28**, *Near Field Cosmology with Ultra-faint Dwarfs: Patchy Reionization and Sub-Solar Initial Mass Function*, GO 16293, PI: Y. Choi, 5 orbits
- **HST Cycle 28**, *Resolved Proper Motions of M33*, GO 16274, PIs: S.T. Sohn & M. Fardal, 25 orbits
- **HST Cycle 28**, *Andromeda and the Seven Dwarfs: M31 Mass, Satellite Orbits, and the Nature of the Satellite Plane*, GO 16273, PI: S.T. Sohn, 48 orbits
- **HST Cycle 27**, *Tracing the 6-D Orbital and Formation History of the Complete M31 Satellite System*, GO 15902, PI: D. Weisz, 244 orbits
- **HST Cycle 27**, *Orbits of Isolated Dwarfs: Local Group Mass and Environmental Quenching*, GO 15911, PI: A. del Pino, 20 orbits
- **HST Cycle 26**, *Resolved Proper Motions of M31 and the M31-M32 Interaction*, GO 15658, PI: S. T. Sohn, 35 orbits

PROFESSIONAL EXPERIENCE

Academic Service

- Referee for *The Astrophysical Journal*, *Monthly Notices of the Royal Astronomical Society*, *Astronomy & Astrophysics*
- Reviewer for NASA FINNEST program
- 2020 - present: Postdocs Representative, UC Berkeley Astronomy Department
- 2017: Steward Observatory Prospective Graduate Student Visit Co-Organizer (4 days, 17 students)
- 2016: NASA Astrophysics Theory Program Executive Secretary
- 2015 - 2017: Steward Observatory Graduate Council Member
- 2013 - 2014: NYU Society of Physics Students President & Outreach Coordinator

Grant Writing

- 2017: *Editor* for the University of Arizona Graduate College Application Support Program, a program that aids graduate students with their pre-doctoral, graduate, and dissertation fellowship applications

COMMUNITY ACTIVITIES

Public Presentations

- October 2020: *Satellite Galaxies in the Local Group*, UC Berkeley Astronomy Night

- June 2020: *Satellite Galaxies in the Local Group*, Mount Diablo Astronomical Society
- May 2020: *Satellite Galaxies in the Local Group*, San Francisco Amateur Astronomers
- February 2020: *Satellite Galaxies in the Local Group*, San Mateo County Astronomical Society
- April 2019: *Satellite Galaxies in the Local Group*, Huachuca Astronomical Society
- April 2018, March 2019: *Galactic Archaeology: From Little to Big*, NOAO Teen Astronomy Cafe
- April 2018: *Satellite Galaxies and Dwarfs in the Local Group*, Sonora Astronomical Society
- September 2017: *Satellite Galaxies and Dwarfs in the Local Group*, Tucson Amateur Astronomy Association

Engagement

- 2018: *Colors of Nature Summer Program Instructor*, Kitt Peak, AZ
- 2017: *St. Michael's School 8th Grade Science Fair Judge*, Tucson, AZ
- 2017, 2018: *Colors of Nature Summer Program Instructor*, Arizona-Sonora Desert Museum, Tucson, AZ
- 2015: *Fruchthendler Elementary School Science Fair Judge*, Tucson, AZ
- 2015: *Senita Valley Elementary School Family Science Night Volunteer*, Tucson AZ
- 2015 - 2017: *Project ASTRO Classroom Astronomer*, Tucson, AZ

Mentoring

- 2015 - 2019: *Tucson Initiative for Minority Engagement in Science and TEchnology Program (TIMESTEP) Mentor*, Undergraduate Students
University of Arizona, Tucson, AZ
- 2014 - 2016: *Tucson Women in Astronomy Mentorship Program Mentor*, Undergraduate Students
University of Arizona, Tucson, AZ
- 2014 - 2017: *Steward Observatory Graduate-Postdoc Mentoring Program Mentor*, Junior Graduate Students

TEACHING EXPERIENCE

- **Teaching Assistant**, University of Arizona 2017 - 2018
ASTR400B, Astronomy Tutoring for Majors & Minors Program
- **Mathematics Tutor**, Ph.G. Tutoring 2015 - 2017
Elementary through High School Students
- **Teaching Assistant**, New York University 2014
Einstein's Universe (non-majors), Physics II (majors)