

# Ekta Patel, PhD

Miller Postdoctoral Fellow - University of California, Berkeley

✉ [ektapatel@berkeley.edu](mailto:ektapatel@berkeley.edu) • 🌐 [ektapatelastro.com](http://ektapatelastro.com) • Citizenship: USA

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

## Education

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- **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, Physics (with Honors) & Astrophysics* *2010-2014*  
Senior Honors Thesis: "The Sloan Digital Sky Survey Large Galaxy Atlas"  
Advisor: Dr. David Hogg

## Selected Fellowships, Honors, and Awards

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- 2019-Present: Miller Research Fellow, Miller Institute for Basic Research in Science (UC Berkeley)
- 2019: Raynor L. Duncombe Student Research Prize
- 2019: NSF Astronomy & Astrophysics Postdoctoral Fellowship (Declined)
- 2018: Academy of Tucson High School Keynote Speaker
- 2016-2019: NSF 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 Marilynn Miles Scholarship Recipient

## Publications

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

10. Sohn, S.T., **Patel, E.**, et al., 2020, ApJ, 901, 43, *HST Proper Motions of NGC 147 and NGC 185: Orbital Histories and Tests of a Dynamically Coherent Andromeda Satellite Plane*
9. **Patel, E. et al.**, 2020, ApJ, 893, 121, *The Orbital Histories of Magellanic Satellites Using Gaia DR2 Proper Motions*
8. Quirk, A. & **Patel, E.**, 2020, MNRAS, 497, 2870-2882, *Asymmetric Drift of Andromeda Analogs in the Illustris Simulations*
7. **Patel, E.**, Carlin, J., Tollerud, E., Collins, M., Dooley, G., 2018, MNRAS, 480, 1883-1897, *ΛCDM Predictions for the Satellite Population of M33*
6. van der Marel, R. P., Fardal, M., Sohn, S.T., **Patel, E.**, et al., 2019, ApJ, 872, 24, *First Gaia Dynamics of the Andromeda System: DR2 Proper Motions, Orbits, and Rotation of M31 and M33*
5. Besla, G., Patton, D., Stierwalt, S., Rodriguez-Gomez, V., **Patel, E.**, et al., 2018, MNRAS, 480, 3376-3396, *The Frequency of Dwarf Galaxy Multiples at Low Redshift in SDSS vs. Cosmological Expectations*
4. **Patel, E.**, Besla, G., Mandel, K., Sohn, S.T., 2018, ApJ, 857, 78-94, *Estimating the Mass of the Milky Way Using the Ensemble of Classical Satellite Galaxies*
3. Sohn, S.T., **Patel, E.**, et al., 2017, ApJ, 849, 93-107, *Space Motions of the Dwarf Spheroidal Galaxies Draco and Sculptor Based on HST Proper Motions with ~ 10 Year Base-Line*
2. **Patel, E.**, Besla, G., Mandel, K., 2017, MNRAS, 468, 3428-3449, *The Orbits of Massive Satellite Galaxies - II. Bayesian Estimates of the Milky Way and Andromeda masses using high precision astrometry and cosmological*

*simulations*

1. **Patel, E.**, Besla, G., Sohn, S.T., 2017, MNRAS, 464, 3825-3849, *The Orbits of Massive Satellite Galaxies - I. A Close Look at the Large Magellanic Cloud and a New Orbital History for M33*

**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

## Selected Presentations

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**Invited: 14**

- o March 2021: University of Florida Astronomy Colloquium
- o February 2021: UC Santa Cruz Astronomy Colloquium
- o November 2020: UC Berkeley Astrophysics Roundtable on Near-field Cosmology, Speaker & Panelist
- o November 2020: Yale Astronomy Colloquium
- o October 2020: Institute for Advanced Study Seminar
- o September 2020: Rutgers University Astrophysics Seminar
- o September 2020: UC Berkeley Astronomy Colloquium
- o March 2020: Las Cumbres Observatory Seminar
- o June 2019: Division of Dynamical Astronomy Duncombe Student Research Prize Talk
- o November 2018: Ohio State University CCAPP Seminar
- o October 2018: UC Berkeley Astronomy Department Lunch Talk
- o October 2018: American Museum of Natural History Astrophysics Seminar
- o July 2018: PHAT Collaboration Team Meeting, Ringberg Castle
- o June 2018: 232nd AAS Meeting Press Conference

**Contributed: 8**

- o December 2020: Linking the Galactic and Extragalactic, Astro3D/Australia (virtual)
- o September 2020: The Local Group: Assembly and Evolution, STScI (virtual)
- o November 2019: Bay Area Local Group Meeting, Kavli Institute/SLAC
- o July 2019: Small Galaxies, Cosmic Questions, Durham University, UK
- o June 2018: 232nd AAS Meeting, Milky Way Session 402, Denver, CO
- o July 2017: Large Surveys of the Great Andromeda Galaxy, Lorentz Center
- o April 2017: Marc Aaronson Symposium, University of Arizona
- o June 2015: Local Group Astrostatistics Conference, University of Michigan (poster)

**Other: 7**

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

## Telescope Time Awarded

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**As Co-Investigator:**

- o **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
- o **HST Cycle 28**, *Resolved Proper Motions of M33*, GO 16274, PIs: S.T. Sohn & M. Fardal, 25 orbits
- o **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
- o **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

## Departmental and Academic Service

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- Referee for *The Astrophysical Journal*, *Monthly Notices of the Royal Astronomical Society*, *Astronomy & Astrophysics*
- Panelist for NASA ADAP 2020
- Reviewer for NASA FINNEST Program 2020
- 2020-Present: Postdocs Representative, UC Berkeley Astronomy Department
- 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
- 2017: Steward Observatory Prospective Graduate Student Visit Co-Organizer (4 days, 17 students)
- Executive Secretary for NASA Astrophysics Theory Program 2016
- 2015-2017: Steward Observatory Graduate Council Member

## Teaching Experience

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- 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)

## Community Activities

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### 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

### Community Engagement

- 2020: *Meet a Miller Fellow* × *El Cerrito High School*, El Cerrito, CA
- 2018: *Colors of Nature Program Instructor*, Kitt Peak, AZ
- 2017: *St. Michael's School 8th Grade Science Fair Judge*, Tucson, AZ
- 2017, 2018: *Colors of Nature 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

- 2020-Present: *POWER Bay Area Mentor*, Berkeley, CA
- 2015-2019: *Tucson Initiative for Minority Engagement in Science and TEchnology Program (TIMESTEP) Mentor*, University of Arizona, Tucson, AZ
- 2014-2016: *Tucson Women in Astronomy Mentorship Program Mentor*, University of Arizona, Tucson, AZ
- 2014-2017: *Steward Observatory Graduate-Postdoc Mentoring Program Mentor*

Updated December 1, 2020