Evan Kirby

University of Notre Dame
Department of Physics
225 Nieuwland Science Hall
Notre Dame, IN 46556
ekirby@nd.edu

Education

Ph.D. in Astronomy, University of California Santa Cruz **2009**
Dissertation: *Iron and Alpha Element Distributions in Milky Way Dwarf Satellites from Medium-Resolution Spectroscopy*
Advisor: Puragra (Raja) Guhathakurta

M.S. in Astronomy, University of California Santa Cruz **2006**

B.S. in Physics, Stanford University **2004**
with Honors and Distinction, concentration in Astrophysics

Employment

Associate Professor **2022 –**
University of Notre Dame

Research Professor **2021 – 2022**
California Institute of Technology

Assistant Professor **2014 – 2021**
California Institute of Technology

Center for Galaxy Evolution Fellow **2012 – 2014**
University of California Irvine

Hubble Fellow **2009 – 2012**
California Institute of Technology

Research Interests

- The origin of the elements
- Chemical evolution of dwarf galaxies
- Nucleosynthesis, including the *r*-process and Type Ia supernovae
- The oldest, most metal-poor stars in the Universe
- Dark matter in dwarf galaxies
- The construction and refinement of efficient spectrographs

Awards

Notre Dame Sigma Pi Sigma Honorary Faculty Inductee	**2024**
NSF CAREER	**2019-2024**
Cottrell Scholar	**2018-2021**
Associated Students of Caltech Teaching Award	**2017**
Newton Lacy Pierce Prize from the American Astronomical Society	**2017**
Chancellor's Dissertation Year Fellowship, UC Santa Cruz	**2008–2009**
National Science Foundation Graduate Research Fellowship	**2005–2008**
Whitford Prize, UC Santa Cruz	**2006**
Chancellor's Fellowship, UC Santa Cruz	**2004–2005**
Jeffrey A. Willick Award, Stanford University	**2004**

Teaching

Phys10320: Engineering Physics II: Electromagnetism (undergraduate)	**2023, 2024**
Phys50201: Physics of Astrophysics (undergraduate+graduate)	**2022, 2023**
Ay20: Basic Astronomy and the Galaxy (undergraduate)	**2017, 2018**
Ay101: Physics of Stars (undergraduate)	**2017, 2018, 2020**
Ay121: Radiative Processes (graduate)	**2015, 2016, 2018**
Ay123: Structure and Evolution of Stars (graduate)	**2016, 2019**
Ay219: Elements in the Universe and Galactic Chemical Evolution (graduate)	**2015**
International Summer School at the San Diego Supercomputer Center	**2014**

Advising

- PhD students
  - **Nicha Leethochawalit**: "The Redshift Evolution of the Stellar Mass-Stellar Metallicity Relation," PhD 2019, Caltech
  - **Gina Duggan**: "Signatures of the *r*-process in Ancient Stellar Populations Using Barium Abundances," PhD 2020, Caltech
  - **Ivanna Escala**: "The Chemical Evolution of M31 Satellite Galaxies," PhD 2020, Caltech
  - **Brent Belland**: "The Subaru Prime Focus Spectrograph and Dark Matter in Dwarf Galaxies," PhD 2021, Caltech
  - **Mithi Alexa de los Reyes**: "Manganese and Type Ia Supernova Nucleosynthesis," PhD 2022, Caltech
  - **Zhuyun Zhuang**: PhD expected 2025, Caltech
  - **Evan Núñez**: PhD expected 2025, Caltech
  - **Pranav Nalamwar**: PhD expected 2026, Notre Dame
  - **Jihye Hong**, PhD expected 2026, Notre Dame
  - **Lauren Henderson**: PhD expected 2027, Notre Dame
  - **Kateryna Kvasova**: PhD expected 2027, Notre Dame
- Postdocs and research faculty
  - **Anders Overaa Thygesen**: "The Stellar Isotope Survey" (2015-17, Caltech)
  - **Borja Anguiano**: assistant research professor (2022-2023, Notre Dame)
  - **Roman Gerasimov**: "Spectral Modeling for Subaru/PFS" (2023-, Notre Dame)
- Undergraduate research
  - 6 Summer Undergraduate Research Fellows (SURFs), Caltech
  - 7 Freshman Summer Research Institute (FSRI) students, Caltech
  - 1 Honors Thesis, Notre Dame
  - 3 Independent Research Students, Notre Dame
  - 2 REU students, Notre Dame
- As a postdoc, guided the dissertations of two masters students
  - **Lei Yang** (2012, Peking University)
  - **Xiaoting Fu** (2012, National Astronomical Observatories of China)
- Mentored 29 high school students on 23 separate projects related to Keck/DEIMOS, Keck/ESI, Keck/HIRES, Palomar/DBSP, and Lick/Hamilton spectroscopy
  - Regeneron Science Talent Search: one national finalist
  - Intel Science Talent Search: one national finalist and one semifinalist
  - Siemens Science Competition: three regional finalists and seven semifinalists
  - California State Science Fair: two first-place finishers

University and Departmental Service

Notre Dame Physics & Astronomy Undergraduate Research Committee (chair: 2023)	**2022-**
Notre Dame Physics & Astronomy Graduate Recruitment Committee	**2022-**
Notre Dame Physics & Astronomy Colloquium Committee	**2023-**
Notre Dame Physics & Astronomy Preliminary Exam Committee	**2022-2023**
Caltech Center for Inclusion & Diversity Faculty Advisory Committee	**2016-2017**
Caltech Astronomy Graduate Admissions Committee (chair: 2017, 2019)	**2014-2019**
Caltech Astronomy Qualifying Exam Committee	**2016-2017, 2019**
Caltech Astronomy Colloquium Committee	**2015-2016**
Caltech Astronomy Prize Postdoc Selection Committee	**2015**
Thirteen PhD Committees	**2017-2022**

Observatory Service

Large Binocular Telescope, Board of Directors	**2022-**
Keck/DEIMOS Throughput Upgrade, PI	**2018-**
Next Generation Palomar Spectrograph, PI	**2015-2021**
Keck Observatory Science Steering Committee	**2015-2020**
Caltech Time Allocation Committee (chair: 2020A)	**2010B, 2011A, 2015A, 2017B, 2020A**

Selected Science Activities

Subaru Prime Focus Spectrograph: Galactic Archaeology Group (co-chair: 2021-)	**2011-**
NSF Review Panels	**2021-**
TMT/WFOS Science Advisory Committee	**2019-**
Keck/Liger Science Advisory Committee	**2019-**
Subaru PFS Collaboration Meeting, LOC	**2019**
AAS Meeting-in-a-Meeting: "Abundances of Dwarf Galaxies," SOC chair	**2018**
HST TAC, Cycles 24-25	**2016-2017**
The Galactic Renaissance ("JudyFest") SOC & LOC chair	**2017**
Spitzer Science Center Oversight Committee	**2016-2018**
Kavli Institute for Astronomy & Astrophysics Visiting Scholar	**2016**
Keck Science Meeting SOC (2016 chair, 2019 co-chair)	**2015, 2016, 2017, and 2019**
NOAO Time Allocation Committee	**2013-2015**

Referee/reviewer:

- ApJ
- ApJL
- MNRAS
- A&A
- PASA
- Nature Astronomy
- Nature Communications
- NSF
- Polish National Science Center
- Canadian TAC
- University of Sydney Thesis Examiner
- Macquarie University Thesis Examiner
- Royal Society Fellowship Reviewer
- French National Research Agency
- Chile FONDECYT

Grants

NASA Keck Observing Grant	$14,750	**2024**
Keck Observatory: DEIMOS Upgrade	$2,101,489	**2020-2024**
NSF MRI: Next Generation Palomar Spectrograph	$999,999	**2020**
Heising-Simons Foundation: Next Generation Palomar Spectrograph	$1,000,000	**2020**
Schmidt Scholars Program at Caltech	$100,000	**2020**
HST Guest Observer Cycle 27	$31,991	**2019**
NSF CAREER	$758,451	**2019**
Keck Observatory Science Steering Committee: white paper funds	$30,000	**2019**
HST Guest Observer Cycle 25	$11,952	**2018**
Cottrell Scholarship	$100,000	**2018**
NSF Mid-Scale Innovations Program (co-PI; PI: Judy Cohen)	$1,024,386	**2016**
NSF Astronomy & Astrophysics Research Grant	$375,525	**2016**
HST Guest Observer Cycle 24	$13,374	**2016**
Keck Science Steering Committee: diffraction grating for DEIMOS	$74,321	**2016**
Private Donation	$50,000	**2016**

Selected Invited Talks

Princeton/Institute for Advanced Study Joint Astrophysics Colloquium	**March 2024**
Astronomical Society of Japan 2024 Spring Annual Meeting	**March 2024**
Dark Matter in the Universe (Matsushima, Japan)	**March 2024**
Stanford/KIPAC Astrophysics Colloquium	**February 2024**
University of Alabama Huntsville Physics & Astronomy Colloquium	**November 2023**
University of Michigan Astronomy Colloquium	**April 2023**
Northwestern CIERA Seminar	**March 2023**
UT Austin Astronomy Colloquium	**April 2021**
Texas A&M Physics & Astronomy Colloquium	**March 2021**
UFRGS Brazil Astronomy Seminar	**February 2021**
Australia National University (RSAA) Colloquium	**February 2021**
Notre Dame Physics Colloquium	**February 2021**
UC Riverside Physics & Astronomy Colloquium	**February 2021**
Indiana University Astronomy Colloquium	**October 2020**
Ohio State University Astronomy Colloquium	**January 2020**
UC Santa Cruz Science Internship Program Reunion, Keynote Talk	**December 2019**
University of Chicago Astrophysics Colloquium	**November 2019**
Caltech Astronomy Colloquium	**October 2019**

Refereed Publications

Evan N. Kirby

H-index: 48 (when restricted to first-author publications: 22)

First Author

1. "The DEEP2 Galaxy Redshift Survey: Redshift Identification of Single-Line Emission Galaxies"
   Kirby, E. N., Guhathakurta, P., Faber, S. M., Koo, D. C., Weiner, B. J., & Cooper, M. C., 2007, ApJ, 660, 62
2. "Metallicity and Alpha-Element Abundance Measurement in Red Giant Stars from Medium Resolution Spectra"
   Kirby, E. N., Guhathakurta, P., & Sneden, C., 2008, ApJ, 682, 1217
3. "Uncovering the Extremely Metal-Poor Stars in the Ultra-Faint Dwarf Spheroidal Galaxies"
   Kirby, E. N., Simon, J. D., Geha, M. C., Guhathakurta, P., & Frebel, A., 2008, ApJL, 685, L43
4. "Multi-Element Abundance Measurements from Medium-Resolution Spectra. I. The Sculptor Dwarf Spheroidal Galaxy"
   Kirby, E. N., Guhathakurta, P., Bolte, M., Sneden, C., & Geha, M. C., 2009, ApJ, 705, 328
5. "Multi-Element Abundance Measurements from Medium-Resolution Spectra. II. Catalog of Stars in Milky Way Dwarf Satellite Galaxies"
   Kirby, E. N., Guhathakurta, P., Simon, J. D., Geha, M. C., Rockosi, C. M., Sneden, C., Cohen, J. G., Sohn, S. T., Majewksi, S. R., & Siegel, M., 2010, ApJS, 191, 352
6. "Multi-Element Abundance Measurements from Medium-Resolution Spectra. III. Metallicity Distributions of Milky Way Dwarf Satellite Galaxies"
   Kirby, E. N., Lanfranchi, G. A., Simon, J. D., Cohen, J. G., & Guhathakurta, P., 2011, ApJ, 727, 78
7. "Multi-Element Abundance Measurements from Medium-Resolution Spectra. IV. Alpha Element Distributions in Milky Way Satellite Galaxies"
   Kirby, E. N., Cohen, J. G., Smith, G. H., Majewksi, S. R., Sohn, S. T., & Guhathakurta, P., 2011, ApJ, 727, 79
8. "Grids of ATLAS9 Atmospheres and MOOG Synthetic Spectra"
   Kirby, E. N., 2011, PASP, 123, 521
9. "Metals Removed by Outflows from Milky Way Dwarf Spheroidal Galaxies"
   Kirby, E. N., Martin, C. L., & Finlator, K., 2011, ApJL, 742, L25
10. "The Dynamics and Metallicity Distribution of the Local Group Galaxy VV124"
    Kirby, E. N., Cohen, J. G., & Bellazzini, M., 2012, ApJ, 751, 46
11. "Detailed Abundances of Two Very Metal-Poor Stars in Dwarf Galaxies"
    Kirby, E. N., & Cohen, J. G., 2012, AJ, 144, 168
12. "Discovery of Super-Li Rich Red Giants in Dwarf Spheroidal Galaxies"
    Kirby, E. N., Fu, X., Guhathakurta, P., & Deng, L., 2012, ApJL, 752, L16
13. "Segue 2: The Least Massive Galaxy"
    Kirby, E. N., Boylan-Kolchin, M., Cohen, J. G., Geha, M., Bullock, J. S., & Kaplinghat, M. 2013, ApJ, 770, 16
14. "The Universal Stellar Mass–Stellar Metallicity Relation for Dwarf Galaxies"
    Kirby, E. N., Cohen, J. G., Guhathakurta, P., Cheng, L., Bullock, J. S., & Gallazzi, A., 2013, ApJ, 779, 102
15. "The Dynamics of Isolated Local Group Galaxies"
    Kirby, E. N., Bullock, J. S., Boylan-Kolchin, J. G., Kaplinghat, M., & Cohen, J. G., 2014, MNRAS, 439, 1015
16. "Carbon in Red Giants in Globular Clusters and Dwarf Spheroidal Galaxies"
    Kirby, E. N., Guo, M., Zhang, A. J., Deng, M., Cohen, J. G., Guhathakurta, P., Shetrone, M. D., Lee, Y. S., & Rizzi, L., 2015, ApJ, 801, 125

17. "Spectroscopic Confirmation of the Dwarf Galaxies Hydra II and Pisces II and the Globular Cluster Laevens 1"
Kirby, E. N., Simon, J. D., & Cohen, J. G., 2015, ApJ, 810, 56

18. "Triangulum II: A Very Dense Ultra-Faint Dwarf Galaxy"
Kirby, E. N., Cohen, J. G., Simon, J. D., & Guhathakurta, P., ApJL, 2015, 814, L7

19. "Lithium-Rich Giants in Globular Clusters"
Kirby, E. N., Guhathakurta, P., Zhang, A. J., Hong, J., Guo, M., Guo, R., Cohen, J. G., & Cunha, K. 2016, ApJ, 819, 135

20. "Chemistry and Kinematics of the Late-Forming Dwarf Irregular Galaxies Leo A, Aquarius, and Sagittarius DIG"
Kirby, E. N., Rizzi, L., Held, E. V., Cohen, J. G., Cole, A. A., Manning, E. M., Skillman, E. D., & Weisz, D. R. 2017, ApJ, 834, 9

21. "Triangulum II: Not Especially Dense After All"
Kirby, E. N., Cohen, J. G., Simon, J. D., Guhathakurta, P., Thygesen, A. O., & Duggan, G. E., 2017, ApJ, 838, 83

22. "Catalog of Chromium, Cobalt, and Nickel Abundances in Globular Clusters and Dwarf Galaxies"
Kirby, E. N., Xie, J. L., Guo, R., Kovalev, M., & Bergemann, M., 2018, ApJS, 237, 18

23. "Evidence for Sub-Chandrasekhar Type Ia Supernovae from Stellar Abundances in Dwarf Galaxies"
Kirby, E. N., Xie, J. L., Guo, R., de los Reyes, M. A. C., Bergemann, M., Kovalev, M., Shen, K. J., Piro, A. L., & McWilliam, A., 2019, ApJ, 881, 45

24. "Elemental Abundances in M31: The Kinematics and Chemical Evolution of Dwarf Spheroidal Satellite Galaxies"
Kirby, E. N., Gilbert, K. M., Escala, I., Wojno, J., Guhathakurta, P., Majewski, S. R., & Beaton, R. L. 2020, AJ, 159, 46

25. "The Stars in M15 Were Born with the *r*-process"
Kirby, E. N., Duggan, G. E., Ramirez-Ruiz, E., & Macias, P. 2020, ApJL, 891, L13

26. "*r*-process Abundance Patterns in the Globular Cluster M92"
Kirby, E. N., Ji, A. P., & Kovalev, M. 2023, ApJ, 958, 45

<u>Second Author</u>

27. "NGC 2419 — Another Remnant of Accretion by the Milky Way"
Cohen, J. G., **Kirby, E. N.**, Simon, J. D., & Geha, M. C., ApJ, 2010, 725, 288

28. "Linking Dwarf Galaxies to Halo Building Blocks with the Most Metal-Poor Star in Sculptor"
Frebel, A., **Kirby, E. N.**, & Simon, J. D., 2010, Nature, 464, 72

29. "The Bizarre Chemical Inventory of NGC 2419, An Extreme Outer Halo Globular Cluster"
Cohen, J. G. & **Kirby, E. N.** 2012, ApJ, 760, 86

30. "Measuring Detailed Chemical Abundances from Co-added Medium Resolution Spectra. I. Tests Using Milky Way Dwarf Spheroidal Galaxies and Globular Clusters"
Lei, Y., **Kirby, E. N.**, Guhathakurta, P., Peng, E. W., & Cheng, L., 2013, ApJ, 768, 4

31. "Detailed Abundance Analysis of the Brightest Star in Segue 2, the Least Massive Galaxy"
Roederer, I. U. & **Kirby, E. N.**, 2014, MNRAS, 440, 2665

32. "An Investigation of the Formation and Line Properties of MgH in 3D Hydrodynamical Model Stellar Atmospheres"
Thygesen, A. O., **Kirby, E. N.**, Gallagher, A. J., Ludwig, H.-G., Caffau, E., Bonifacio, P., & Sbordone, L. 2017, ApJ, 843, 144

33. "Evolution of the Stellar Mass−Metallicity Relation. I. Galaxies in the $z \sim 0.4$ Cluster Cl0024"
Leethochawalit, N., **Kirby, E. N.**, Moran, S., Ellis, R. S., & Treu, T. 2018, ApJ, 856, 15

34. "Neutron Stars are the Dominant Source of the *r*-process in the Early Evolution of Dwarf Galaxies"
Duggan, G. E., **Kirby, E. N.**, Andrievsky, S. M., & Korotin, S. A., 2018, ApJ, 869, 50

35. "Elemental Abundances in M31: Alpha and Iron Element Abundances from Low-resolution Resolved Stellar Spectroscopy in the Stellar Halo"
Escala, I. E., **Kirby, E. N.**, Gilbert, K. M., Cunningham, E. C., & Wojno, J., 2019, ApJ, 878, 42

36. "Elemental Abundances in M31: First Alpha and Iron Abundance Measurements in M31's Giant Stellar Stream"
Gilbert, K. M., **Kirby, E. N.**, Escala, I., Wojno, J., Kalirai, J. S., & Guhathakurta, P., 2019, ApJ, 883, 128

37. "Evolution of the Stellar Mass−Metallicity Relation. II. Constraints on Galactic Outflows from the Mg Abundances of Quiescent Galaxies"
Leethochawalit, N., **Kirby, E. N.**, Moran, S., Ellis, R. S., & Treu, T., 2019, ApJ, 885, 100

38. "Manganese Indicates a Transition from Sub- to Near-Chandrasekhar Type Ia Supernovae in Dwarf Galaxies"
de los Reyes, M. A. C., **Kirby, E. N.**, Seitenzahl, I. R., & Shen, K. J., 2020, ApJ, 891, 85

39. "Elemental Abundances in M31: Properties of the Inner Stellar Halo"
Escala, I. E., **Kirby, E. N.**, Gilbert, K. M., & Wojno, J., 2020, ApJ, 902, 51

40. "NGC 6822 as a Probe of Dwarf Galactic Evolution"
Belland, B., **Kirby, E. N.**, Boylan-Kolchin, M., & Wheeler, C., 2020, ApJ, 903, 10

41. "NGC 147 Corroborates the Break in the Stellar Mass-Stellar Metallicity Relation for Galaxies"
Zhuang, Z., **Kirby, E. N.**, Leethochawalit, N., & de los Reyes, M. A. C., 2021, ApJ, 920, 63

42. "Simultaneous Constraints on the Star Formation History and Nucleosynthesis of Sculptor dSph"
de los Reyes, M. A. C., **Kirby, E. N.**, Ji, A. P. & Haze Nuñez, E., 2022, ApJ, 925, 66

43. "Empirical Constraints on Core Collapse Supernova Yields using Very Metal Poor Damped Lyman Alpha Absorbers"
Nuñez, E. H., **Kirby, E. N.**, & Steidel, C. C., 2022, ApJ, 927, 64

44. "Dwarfs in Void Environments (DIVE): The Stellar Kinematics of Void Dwarf Galaxies Using the Keck Cosmic Web Imager"
de los Reyes, M. A. C., **Kirby, E. N.**, Zhuang, Z., Steidel, C. C., Chen, Y., & Wheeler, C. 2023, ApJ, 951, 52

<u>*n*th Author</u>

45. "Millimeter-Wave Profiled Corrugated Horns for the Quad Cosmic Background Polarization Experiment"
Murphy, J. A., Gleeson, E., Cahill, G., Lanigan, W., O'Sullivan, C., Cartwright, E., Church, S. E., Hinderks, J., **Kirby, E. N.**, Thompson, K., Rusholme, B., Gear, W. K., Maffei, B., Ade, P. A. R., Tucker, C., & Jones, B., 2005, International Journal of Infrared and Millimeter Waves, 26, 505

46. "Corrugated waveguide band edge filters for CMB experiments in the far infrared"
Gleeson, E., Murphy, J. A., Maffei, B., Lanigan, W., Brossard, J., Cahill, G., Cartwright, E., Church, S. E., Hinderks, J., **Kirby, E. N.**, & O'Sullivan, C., 2005, Infrared Physics & Technology, 46, 493

47. "The All-wavelength Extended Groth Strip International Survey (AEGIS) Data Sets"
Davis, M., et al., 2007, ApJL, 660, L1

48. "AEGIS: Galaxy Spectral Energy Distributions from the X-Ray to Radio"
Konidaris, N. P., et al., 2007, ApJL, 660, L7

49. "Stellar Kinematics in the Complicated Inner Spheroid of M31: Discovery of Substructure Along the Southeastern Minor Axis and its Relationship to the Giant Southern Stream"
Gilbert, K. M., et al., 2007, ApJ, 668, 245

50. "Lyman Alpha Emitters in the DEEP2 Spectroscopic Database"
Sawicki, M., Lemaux, B. C., Guhathakurta, P., **Kirby, E. N.**, Konidaris, N. P., Martin, C. L., Cooper, M. C., Newman, J. A., & Weiner, B. J., 2008, ApJ, 687, 884

51. "BH Accretion in Galaxies Since $z \sim 1$"
Shi, Y., Rieke, G., Donley, J., Cooper, M. C., Willmer, C., **Kirby, E. N.**, 2008, ApJ, 688, 794

52. "QUaD: A High-Resolution Cosmic Microwave Background Polarimeter"
Hinderks, J., et al., 2009, ApJ, 692, 1221

53. "The Least Luminous Galaxy: Spectroscopy of the Milky Way Satellite Segue 1"
Geha, M. C., Willman, B., Simon, J. D., Strigari, L. E., **Kirby, E. N.**, Law, D. R., & Strader, J., 2009, ApJ, 692, 1464

54. "The SPLASH Survey: A Spectroscopic Portrait of Andromeda's Giant Southern Stream"
Gilbert, K. M., Guhathakurta, P., Kollipara, P., Beaton, R. L., Geha, M. C., Kalirai, J. S., **Kirby, E. N.**, Majewksi, S. R., & Patterson, R. J., 2009, ApJ, 705, 1275

55. "Local Group Dwarf Elliptical Galaxies. II. Stellar Kinematics to Large Radii in NGC 147 and NGC 185"
Geha, M. C., van der Marel, R. P., Guhathakurta, P., Gilbert, K. M., Kalirai, J. S., & **Kirby, E. N.**, 2010, ApJ, 711, 361

56. "The SPLASH Survey: Internal Kinematics, Chemical Abundances, and Masses of the Andromeda I, II, III, VII, X, and XIV dSphs"
Kalirai, J. S., Beaton, R. L., Geha, M. C., Gilbert, K. M., Guhathakurta, P., **Kirby, E. N.**, Majewksi, S. R., Ostheimer, J. C., Patterson, R. J., & Wolf, J., 2010, ApJ, 711, 671

57. "High-resolution Spectroscopy of Extremely Metal-poor Stars in the Least Evolved Galaxies: Leo IV"
Simon, J. D., Frebel, A., McWilliam, A., **Kirby, E. N.**, & Thompson, I. B., 2010, ApJ, 716, 446

58. "Willman 1 — A Probable Dwarf Galaxy with an Irregular Kinematic Distribution"
Willman, B., Geha, M. C., Strader, J., Strigari, L. E., Simon, J. D., **Kirby, E. N.**, & Warres, A., 2011, AJ, 142, 128

59. "A Complete Spectroscopic Survey of the Milky Way Satellite Segue 1: The Darkest Galaxy"
Simon, J. D., Geha, M. C., Minor, Q. E., Martinez, G. D., **Kirby, E. N.**, Bullock, J. S., Kaplinghat, M., Strigari, L. E., Willman, B., Choi, P. I., Tollerud, E. J., & Wolf, J., 2011, ApJ, 733, 46

60. "The Peculiar Chemical Inventory of NGC 2419 - An Extreme Outer Halo 'Globular Cluster'"
Cohen, J. G., Huang, W., & **Kirby, E. N.**, 2011, ApJ, 740, 60

61. "Structure and Dynamics of the Globular Cluster Palomar 13"
Bradford, J. D., Geha, M., Muñoz, R., Santana, F. A., Simon, J. D., Côté, P., Stetson, P. B., **Kirby, E. N.**, & Djorgovski, S. G., 2011, ApJ, 743, 167

62. "Characterizing the Cool KOIs III. KOI-961: A Small Star with Large Proper Motion and Three Sub-Earth-Sized Planets"
Muirhead, P., et al., 2012, ApJ, 747, 144

63. "The SPLASH Survey: Spectroscopy of 15 M31 Dwarf Spheroidal Satellites"
Tollerud, E. J., et al., 2012, ApJ, 752, 45

64. "The Primeval Populations of Ultra-Faint Dwarf Galaxies"
Brown, T., Tumlinson, J., Geha, M., **Kirby, E. N.**, VandenBerg, D. A., Muñoz, R., Kalirai, J. S., Simon, J. D., Avila, R. J., Guhathakurta, P., Renzini, A., & Ferguson, H. C., 2012, ApJL, 753, L21

65. "Two Distant Halo Velocity Groups Discovered by the Palomar Transient Factory"
Sesar, B., Cohen, J. G., Levitan, D., Grillmair, C. J., Jurić, M., **Kirby, E. N.**, Laher, R. R., Ofek, E. O., Surace, J. A., Kulkarni, S. R., & Prince, T. A., 2012, ApJ, 755, 134

66. "A Unique, Isolated Dwarf Galaxy at $D = 1.9$ Mpc"
Makarov, D., Makarova, L., Sharina, M., Uklein, R., Tikhonov, A., Guhathakurta, P., **Kirby, E. N.**, & Terekhova, N., 2012, MNRAS, 425, 709

67. "Global Properties of M31's Stellar Halo from the SPLASH Survey: I. Surface Brightness Profile"
Gilbert, K. M., Guhathakurta, P., Beaton, R. L., Bullock, J., Geha, M. C., Kalirai, J. S., **Kirby, E. N.**, Majewski, S. R., Ostheimer, J. C., Patterson, R. J., Tollerud, E. J., Tanaka, M., & Chiba, M., 2012, ApJ, 760, 76

68. "Internal Stellar Kinematics of M32 from the SPLASH Survey: Dark Halo Constraints"
Howley, K., Guhathakurta, P., Van der Marel, R., Geha, M., Kalirai, J., Yniguez, B., **Kirby, E. N.**, Cuillandre, J.-C., & Gilbert, K., 2013, ApJ, 765, 65

69. "The Distribution of Alpha Elements in Ultra-faint Dwarf Galaxies"
Vargas, L. C., Geha, M., **Kirby, E. N.**, & Simon, J. D., 2013, ApJ, 767, 134

70. "The Stellar Initial Mass Function of Ultra-Faint Dwarf Galaxies: Evidence for IMF Variations with Galactic Environment"
Geha, M., Brown, T. M., Tumlinson, J., Kalirai, J. S., Simon, J. D., **Kirby, E. N.**, VandenBerg, D. A., Muñoz, R., Avila, R. J., Guhathakurta, P. & Ferguson, H. C., 2013, ApJ, 771, 29

71. "The DEEP2 Galaxy Redshift Survey: Design, Observations, Data Reduction, and Redshifts"
Newman, J. A., et al., 2013, ApJS, 208, 5

72. "Normal and Outlying Populations in the Milky Way Stellar Halo at [Fe/H] < −2"
Cohen, J. G., Christlieb, N., Thompson, I., McWilliam, A., Shectman, S., Reimers, D., Wisotzki, L., & **Kirby, E. N.**, 2013, ApJ, 778, 56

73. "Segue 1: An Unevolved Fossil from the Early Galaxy"
Frebel, A., Simon, J. D., & **Kirby, E. N.**, 2014, ApJ, 786, 74

74. "Too Big To Fail in the Local Group"
Garrison-Kimmel, S., Boylan-Kolchin, M., Bullock, J. S., & **Kirby, E. N.**, 2014, MNRAS, 444, 222

75. "Global Properties of M31's Stellar Halo from the SPLASH Survey: II. Metallicity Profile"
Gilbert, K. M., Kalirai, J. S., Guhathakurta, P., Beaton, R. L., Geha, M. C., **Kirby, E. N.**, Majewski, S. R., Patterson, R. J., Tollerud, E. J., Bullock, J. S., Tanaka, M., & Chiba, M., 2014, ApJ, 796, 76

76. "The Quenching of the Ultra-Faint Dwarf Galaxies in the Reionization Era"
Brown, T. M., Tumlinson, J., Geha, M. C., Simon, J. D., Vargas, L. C., VandenBerg, D. A., **Kirby, E. N.**, Kalirai, J. S., Avila, R. J., Gennaro, M., Ferguson, H. C., Muñoz, R. R., Guhathakurta, P., & Renzini, A., 2014, ApJ, 796, 91

77. "[α/Fe] Abundances of Four Outer M31 Halo Stars"
Vargas, L. C., Gilbert, K. M., Geha, M. C., Tollerud, E. J., **Kirby, E. N.**, & Guhathakurta, P., 2014, ApJL, 797, L2

78. "Stellar Mass–Gas-phase Metallicity Relation at $0.5 \leq z \leq 0.7$: A Power Law with Increasing Scatter toward the Low-mass Regime"
Guo, Y., et al., 2016, ApJ, 822, 103

79. "First results from the MADCASH Survey: A Faint Dwarf Galaxy Companion to the Low Mass Spiral Galaxy NGC 2403 at 3.2 Mpc "
Carlin, J. L., Sand, D. J., Price, P., Willman, B., Karunakaran, A., Spekkens, K., Bell, E. F., Brodie, J. P., Crnojević, D., Forbes, D. A., Hargis, J., **Kirby, E. N.**, Lupton, R., Peter, A. H. G., Romanowsky, A. J., & Strader, J., 2016, ApJL, 828, L5

80. "The Structure and Dynamical Evolution of the Stellar Disk of a Simulated Milky Way-Mass Galaxy"
Ma, X., Hopkins, P. F., Wetzel, A. R., **Kirby, E. N.**, Angles-Alcazar, D., Faucher-Giguere, C.-A., Kereš, D., & Quataert, E., 2017, MNRAS, 467, 2430

81. "The Binary Fraction of Stars in Dwarf Galaxies: The Case of Leo II"
Spencer, M., Mateo, M., Walker, M., Olszewski, E., McConnachie, A., **Kirby, E. N.**, & Koch, A., 2017, AJ, 153, 254

82. "Deep Subaru Hyper Suprime-Cam observations of Milky Way satellites Columba I and Triangulum II"
Carlin, J. L., Sand, D. J., Muñoz, R. R., Spekkens, K., Willman, B., Crnojević, D., Forbes, D. A., Hargis, J., **Kirby, E. N.**, Peter, A. H. G., Romanowsky, A. J., & Strader, J. 2017, AJ, 154, 267

83. "Global Properties of M31's Stellar Halo from the SPLASH Survey: III. Measuring the Stellar Velocity Dispersion Profile"
Gilbert, K. M., Tollerud, E., Beaton, R. L., Guhathakurta, P., Bullock, J. S., Chiba, M., Kalirai, J. S., **Kirby, E. N.**, Majewski, S. R., & Tanaka, M., 2018, ApJ, 852, 128

84. "Stellar Stream and Halo Structure in the Andromeda Galaxy From a Subaru/Hyper Suprime-Cam Survey"
Komiyana, Y., Chiba, M., Tanaka, M., Tanaka, M., Kirihara, T., Mori, M., Lupton, R. H., Guhathakurta, P., Kalirai, J. S., Gilbert, K., **Kirby, E. N.**, Lee, M. G., Jang, I. S., Sharma, S., & Hayashi, K. 2018, ApJ, 853, 29

85. "Modeling chemical abundance distributions for dwarf galaxies in the Local Group: the impact of turbulent metal diffusion"
Escala, I., Wetzel, A., **Kirby, E. N.**, Hopkins, P. F., Ma, X., Wheeler, C, Kereš, D., Faucher-Giguère, C.-A., & Quataert, E. 2018, MNRAS, 474, 2194

86. "Evidence of a Non Universal Stellar Initial Mass Function. Insights from HST Optical Imaging of 6 Ultra Faint Dwarf Milky Way Satellites"
Gennaro, M., Tchernyshyov, K., Brown, T. M., Geha, M., Avila, R. J., Guhathakurta, P., Kalirai, J. S., **Kirby, E. N.**, Renzini, A., Simon, J. D., Tumlinson, J., & Vargas, L. C. 2018, ApJ, 855, 20

87. "The Binary Fraction of Stars in Dwarf Galaxies: The Cases of Draco and Ursa Minor"
Spencer, M., Mateo, M., Walker, M. G., Olszewski, E., McConnachie, A., & **Kirby, E. N.** 2018, AJ, 156, 257

88. "Focal Ratio Degradation for Fiber Positioner Operation in Astronomical Spectrographs"
Belland, B., Gunn, J., Reiley, D., Cohen, J., **Kirby, E.**, de Oliveira, A. C., de Oliveira, L. S., Roberts, M., & Seiffert, M. 2019, JAI, 8, 1950007

89. "HALO7D I: The Line of Sight Velocities of Distant Main Sequence Stars in the Milky Way Halo"
Cunningham, E. C., Deason, A. J., Rockosi, C. M., Guhathakurta, P., Jennings, Z. G., **Kirby, E. N.**, Toloba, E., & Barro. G. 2019, ApJ, 876, 124

90. "Tentative detection of the circumgalactic medium of the isolated low-mass dwarf galaxy WLM"
Zheng, Y., Putman, M. E., Emerick, A., McQuinn, K. B. W., Werk, J. K., Lockman, F. J., Oppenheimer, B. D., Fox, A. J., **Kirby, E. N.**, & Burchett, J. N. 2019, MNRAS, 490, 467

91. "Elemental Abundances in M31: A Comparative Analysis of Alpha and Iron Element Abundances in the the Outer Disk, Giant Stellar Stream, and Inner Halo of M31"
Escala, I., Gilbert, K. M., **Kirby, E. N.**, Wojno, J., Cunningham, E. C., & Guhathakurta, P. 2020, ApJ, 889, 177

92. "Elemental Abundances in M31: [Fe/H] and [α/Fe] in M31 Dwarf Galaxies Using Coadded Spectra"
Wojno, J., Gilbert, K. M., **Kirby, E. N.**, Escala, I., Beaton, R. L., Tollerud, E., Majewski, S. R., & Guhathakurta, P. 2020, ApJ, 895, 78

93. "Multiple Chemodynamic Stellar Populations of the Ursa Minor Dwarf Spheroidal Galaxy"
Pace, A. B., Kaplinghat, M., **Kirby, E. N.**, Simon, J. D., Tollerud, E., Muñoz, R. R., Côté, P., Djorgovski, S. G., & Geha, M. 2020, MNRAS, 495, 3022

94. "Elemental Abundances in M31: Iron and Alpha Element Abundances in M31's Outer Halo"
Gilbert, K. M., Wojno, J., **Kirby, E. N.**, Escala, I., Beaton, R. L., Guhathakurta, P., & Majewski, S. R. 2020, AJ, 160, 41

95. "Characterizing the Circumgalactic Medium of the Lowest-Mass Galaxies: A Case Study of IC 1613"
Zheng, Y., Emerick, A., Putman, M. E., Werk, J. K., **Kirby, E. N.**, & Peek, J. E. G. 2020, ApJ, 905, 133

96. "Elemental Abundances in M31: Gradients in the Giant Stellar Stream"
Escala, I., Gilbert, K. M., Wojno, J., **Kirby, E. N.**, & Guhathakurta, P. 2021, AJ, 162, 45

97. "Star Formation Histories of Ultra-Faint Dwarf Galaxies: environmental differences between Magellanic and non-Magellanic satellites?"
Saachi, E., Richstein, H., Kallivayalil, N., van der Marel, R., Libralato, M., Zivick, P., Besla, G., Brown, T. M., Choi, Y., Deason, A., Fritz, T., Geha, M., Guhathakurta, P., Jeon, M., **Kirby, E. N.**, Majewski, S. R., Patel, E., Simon, J. D., Sohn, S. T., Tollerud, E., & Wetzel, A. 2021, ApJL, 920, L19

98. "Structural parameters and possible association of the Ultra-Faint Dwarfs Pegasus III and Pisces II from deep Hubble Space Telescope photometry"
Richstein, H., Patel, E., Kallivayalil, N., Simon, J. D., Zivick, P., Tollerud, E., Fritz, T., Warfield, J. T., Besla, G., van der Marel, R. P., Wetzel, A., Choi, Y., Deason, A., Geha, M., Guhathakurta, P., Jeon, M., **Kirby, E. N.**, Libralato, M., Sacchi, E., Sohn, S. T. 2022, ApJ, 933, 217

99. "Stellar kinematics of dwarf galaxies from multi-epoch spectroscopy: application to Triangulum II"
Buttry, R., Pace, A. B., Koposov, S. E., Walker, M. G., Caldwell, N., **Kirby, E. N.**, Martin, N. F., Mateo, M., Olszewski, E. W., Starkenburg, E., Badenes, C., & Daher, C. M. 2022, MNRAS, 514, 1706

100. "The Hubble Space Telescope Survey of M31 Satellite Galaxies. I. RR Lyrae-based Distances and Refined 3D Geometric Structure"
Savino, A., et al. 2022, ApJ, 938, 101

101. "A Glimpse of the Stellar Populations and Elemental Abundances of Gravitationally Lensed, Quiescent Galaxies at $z \gtrsim 1$ with Keck Deep Spectroscopy"
Zhuang, Z., Leethochawalit, N., **Kirby, E. N.**, Nightingale, J. W., Steidel, C. C., Glazebrook, K., Barone, T. M., Skobe, H., Sweet, S. M., Nanayakkara, T., Allen, R. J., Keerthi Vasan G., C., Jones, T., Kacprzak, G. G., Tran, K.-V. H., Jacobs, C. 2023, ApJ, 948, 132

102. "A non-interacting Galactic black hole candidate in a binary system with a main-sequence star"
Chakrabarti, S., Simon, J. D., Craig, P. A., Reggiani, H., Guhathakurta, P., Dalba, P. A., **Kirby, E. N.**, Chang, P., Hey, D. R., Savino, A., Geha, M. 2023, AJ, 166, 6

103. "Elemental abundances in M31: Individual and Coadded Spectroscopic [Fe/H] and [{\alpha}/Fe] throughout the M31 Halo with SPLASH"
Wojno, J. L., Gilbert, K. M., **Kirby, E. N.**, Escala, I., Guhathakurta, P., Beaton, R. L., Kalirai, J., Chiba, M., Majewski, S. R. 2023, ApJ, 951, 12

104. "HALO7D III: Chemical Abundances of Milky Way Halo Stars from Medium Resolution Spectra"
McKinnon, K. A., Cunningham, E. C., Rockosi, C. M., Guhathakurta, P., Escala, I., **Kirby, E. N.**, Deason, A. J. 2023, ApJ, 951, 43

105. "On the Metallicities and Kinematics of the Circumgalactic Media of Damped Lyα Systems at $z \sim 2.5$"
Urbano Stawinski, S. M., Rubin, K. H. R., Prochaska, J. X., Hennawi, J. F., Tejos, N., Fumagalli, M., Rafelski, M., **Kirby, E. N.**, Lusso, E., Hafen, Z. 2023, ApJ, 951, 135

106. "The JWST Resolved Stellar Populations Early Release Science Program II. Survey Overview"
Weisz, D. R., et al. 2023, ApJS, 268, 15

107. "Upgrades to W. M. Keck observatory detector systems"
Álvarez, C, Kassis, M., Greffe, T., Smith, R., Baril, M., Campbell, R., Gomez, P., **Kirby, E.**, Mawet, D., Roberts, M., Weber, R., Hale, D., Cavalieri, D., Holewczynski, J., Smous, J., Kwok, S., Chan, D., Dahler, M., 2023, Astronomische Nachrichten, 344, 20230062

108. "W. M. Keck observatory instrumentation status and future direction"
Kassis, M., et al., 2023, Astronomische Nachrichten, 344, 20230088

109. "The Hubble Space Telescope Survey of M31 Satellite Galaxies II. The Star Formation Histories of Ultra-Faint Dwarf Galaxies"
Savino, A., et al. 2023, ApJ, 956, 86

110. "A Comprehensive Investigation of Metals in the Circumgalactic Medium of Nearby Dwarf Galaxies"
Zheng, Y., Faerman, Y., Oppenheimer, B. D., Putman, M. E., McQuinn, K. B. W., **Kirby, E. N.**, Burchett, J. N., Telford, O. G., Werk, J. K., Kim, D. 2024, ApJ, 960, 55

111. "The JWST Resolved Stellar Populations Early Release Science Program V. DOLPHOT Stellar Photometry for NIRCam and NIRISS"
Weisz, D., et al., 2024, ApJS, accepted, arXiv:2402.03504

112. "Deep Hubble Space Telescope Photometry of LMC and Milky Way Ultra-Faint Dwarfs: A careful look into the magnitude-size relation"
Richstein, H., Kallivayalil, N., Simon, J. D., Garling, C. T., Wetzel, A., Warfield, J. T., van der Marel, R. P., Jeon, M., Rose, J. C., Torrey, P., Engelhardt, A. C., Besla, G., Choi, Y., Geha, M., Guhathakurta, P., **Kirby, E. N.**, Patel, E., Sacchi, E., Sohn, S. T., 2024, ApJ, accepted, arXiv:2402.08731

113. "The Hubble Space Telescope Survey of M31 Satellites. III. Calibrating the Horizontal Branch as an Age Indicator for Nearby Galaxies"
Jennings, C., Savino, A., Weisz, D., Kallivayalil, N., Cole, A., Collins, M., Dolphin, A., Ferguson, A., Gilbert, K., Guhathakurta, P., **Kirby, E.**, Lewis, G., Martin, N., Rich, M., Skillman, E., van der Marel, R., Warfield, J., 2024, ApJ, submitted, arXiv:2311.16397

114. "The structure of the stellar halo of the Andromeda galaxy explored with the NB515 for Subaru/HSC. I. New insights on the stellar halo up to 120 kpc"
Ogami, I., Tanaka, M., Komiyama, Y., Chiba, M., Guhathakurta, P., **Kirby, E. N.**, Wyse, R. F. G., Filion, C., Gilbert, K. M., Escala, I., Mori, M., Kirihara, T., Tanaka, M., Ishigaki, M. N., Hayashi, K., Lee, M. G., Sharma, S., Kalirai, J. S., Lupton, R. H., 2024, MNRAS, submitted, arXiv:2401.00668

115. "The JWST Resolved Stellar Populations Early Release Science Program VI. Identifying Evolved Stars in Nearby Galaxies"
Boyer, M. L., et al., 2024, ApJ, submitted, arXiv:2401.14889

116. "Detection of a Spatially Extended Stellar Population in M33: A Shallow Stellar Halo?"
Ogami, I., Komiyama, Y., Chiba, M., Tanaka, M., Guhathakurta, P., **Kirby, E. N.**, Wyse, R. F. G., Filion, C., Kirihara, T., Ishigaki, M. N., Hayashi, K., 2024, ApJ, submitted, arXiv:2403.14234