Susan E. Clark

Curriculum Vitae

School of Natural Sciences
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APPOINTMENTS

Assistant Professor, Stanford University Department of Physics	beginning 2021
Member, Institute for Advanced Study	2017 – present
NASA Hubble Fellow, Institute for Advanced Study	2017 – 2020

EDUCATION

Columbia University
Ph.D., Astrophysics 2017
Dissertation: *Magnetic Fields in the Interstellar Medium*
M.A., M.Phil, Astrophysics 2014

The University of North Carolina at Chapel Hill
B.S., Physics 2012

HONORS, AWARDS AND GRANTS

Terman Faculty Fellow, Stanford University	2021
Hubble Fellowship	2017 - 2020
Institute for Advanced Study School of Natural Sciences Fellowship	2020 - 2022
Unsung Hero Award, Princeton Prison Teaching Initiative	2019
PI, Arecibo Observing Proposal A3172, 46 hours	2017
ASNY Graduate Student Paper Prize	2016
CCAPP Price Prize in Cosmology and AstroParticle Physics	2016
PI, VLA Observing Proposal 16A-133, 8 hours	2016
PRL Editors' Recommendation Paper	2015
NSF Graduate Research Fellowship	2012 – 2017
Columbia Dean's Fellowship	2012 – 2017
Morehead-Cain Scholarship	2008 – 2012

Full scholarship to UNC-Chapel Hill

PUBLICATIONS

First- and single-author refereed journal articles

8. **S.E. Clark**, Chang-Goo Kim, J. Colin Hill, B.S. Hensley. *The Origin of Parity Violation in Polarized Dust Emission and Implications for Cosmic Birefringence.* 2021, submitted to ApJ. arXiv:2105.00120

7. **S.E. Clark** & B.S. Hensley. *Mapping the Magnetic Interstellar Medium in Three Dimensions Over the Full Sky with Neutral Hydrogen.* 2019, ApJ 887, 2. arXiv:1909.11673

6. **S.E. Clark**, J.E.G. Peek, M.-A. Miville-Deschênes. *The physical nature of neutral hydrogen intensity structure.* 2019, ApJ 874, 171. arXiv:1902.01409

5. **S.E. Clark**. *A new probe of line-of-sight magnetic field tangling.* 2018, ApJL 857, L10. arXiv:1802.00011

4. **S.E. Clark** & J.S. Oishi. *The weakly nonlinear magnetorotational instability in a global, cylindrical Taylor-Couette flow.* 2017, ApJ 841, 2. arXiv:1610.01603

3. **S.E. Clark** & J.S. Oishi. *The weakly nonlinear magnetorotational instability in a local geometry.* 2017, ApJ 841, 1. arXiv:1610.01616

2. **S.E. Clark**, J. Colin Hill, J.E.G. Peek, M.E. Putman, B.L. Babler. *Neutral hydrogen structures trace dust polarization angle: Implications for cosmic microwave background foregrounds.* 2015, PRL 115, 241302. Selected as PRL Editors' Recommendation. arXiv:1508.07705.

1. **S.E. Clark**, J.E.G. Peek, M.E. Putman. *Magnetically aligned* HI *fibers and the Rolling Hough Transform.* 2014, ApJ 789, 82. arXiv:1312.1338

Other refereed journal articles

13. Yilun Guan, **S.E. Clark**, B.S. Hensley, P.A. Gallardo, S. Naess, et al. *The Atacama Cosmology Telescope: Microwave Intensity and Polarization Maps of the Galactic Center.* 2021, submitted to ApJ. arXiv:2105.05267

12. A.J.M. Thomson, T.L. Landecker, N. McClure-Griffiths et al. incl. **S.E. Clark**. *The Global Magneto-Ionic Medium Survey (GMIMS): The brightest polarized region in the Southern sky at 75 cm and its implications for Radio Loop II.* 2021, submitted to MNRAS.

11. J.S. Oishi, K.J. Burns, **S.E. Clark**, E.H. Anders, B.P. Brown, G.M. Vasil, D Lecoanet. *eigentools: A Python package for studying differential eigenvalue problems with an emphasis on robustness.* 2021, submitted to JOSS.

10. V. Pelgrims, **S.E. Clark**, B.S. Hensley, G. V. Panopoulou, V. Pavlidou, K. Tassis, H.K. Eriksen, I.K. Wehus. *Evidence for Line-of-Sight Frequency Decorrelation of Polarized Dust Emission in Planck Data.* 2021, accepted to A&A. arXiv:2101.09291

9. Choi et al. incl. **S.E. Clark**. *The Atacama Cosmology Telescope: A Measurement of the Cosmic Microwave Background Power Spectra at 98 and 150 GHz.* 2020. arXiv:2007.07289

8. Aiola et al. incl. **S.E. Clark**. *The Atacama Cosmology Telescope: DR4 Maps and Cosmological Parameters.* 2020, submitted to JCAP. arXiv:2007.07288

7. J.E.G. Peek & **S.E. Clark**. *Small-Scale HI Channel Map Structure is Cold: Evidence from Na* I *Absorption at High Galactic Latitudes.* 2019, ApJL 886, 1. arXiv:1909.09647

6. A.J.M. Thomson, T.L. Landecker, [11 authors], **S.E. Clark**, [2 authors]. *Through thick or thin: Multiple components of the magneto-ionic medium towards the nearby* HII *region Sharpless 2-27 revealed by Faraday tomography.* 2019, MNRAS 487, 4751. arXiv:1905.09285

5. J.E.G. Peek, B.L. Babler, Y. Zheng, **S.E. Clark**, K.A. Douglas, E.J. Korpela, M.E. Putman, S. Stanimirović, S.J. Gibson, C. Heiles. *The GALFA-HI Survey Data Release 2.* 2018, ApJS 234, 1. ADS

4. F. Heitsch, B. Bartell, **S.E. Clark**, J.E.G. Peek, D. Cheng, M.E. Putman. *Three-dimensional orientation of compact high velocity clouds.* 2016, MNRAS Letters 462, L46. arXiv:1606.06689

3. J. Malinen, L. Montier, J. Montillaud, M. Juvela, I. Ristorcelli, **S.E. Clark**, O. Berné, J.-Ph. Bernard, V.-M. Pelkonen, D.C. Collins. *Matching dust emission structures and magnetic field in high-latitude cloud L1642: comparing Herschel and Planck maps.* 2016, MNRAS 460, 1934. arXiv:1512.03775

2. N.M. McClure-Griffiths, S. Stanimirović, [5 authors], **S.E. Clark**, [3 authors]. *Galactic and Magellanic evolution with the SKA*. 2015, from "Advancing Astrophysics with the Square Kilometre Array", PoS. arXiv:1501.01130

1. W.-H. Hsu, M.E. Putman, F. Heitsch, S. Stanimirović, J.E.G. Peek, **S.E. Clark**. *Physical properties of Complex C halo clouds*. 2011, AJ 141, 57. arXiv:1011.0011

Conference proceedings

3. I. Lowe, G. Coppi, et al. incl. **S.E. Clark**. *The Balloon-borne Large Aperture Submillimeter Telescope Observatory.* 2020, in Proc. SPIE 11445, Ground-based and Airborne Telescopes VIII, 114457A. arXiv:2012.01376

2. **S.E. Clark**. *Galactic neutral hydrogen and the magnetic ISM foreground.* 2017, in Jelić & van der Hulst (Eds.) *Peering towards Cosmic Dawn*, Proceedings of the International Astronomical Union, Symposium No. 333, Dubrovnik, Croatia

1. **S.E. Clark**, J.E.G. Peek, J. Colin Hill, M.E. Putman. *Quantifying the magnetic alignment of* HI *and dust in the diffuse ISM.* 2016, in P. Jablonka, Ph. André, F. van der Tak (Eds.) *From Interstellar Clouds to Star-forming Galaxies: Universal Processes?* Proceedings of the International Astronomical Union Symposia and Colloquia, IAU 315, Honolulu, Hawaii

White papers and mission proposals

8. A. Lee et al. incl. **S.E. Clark**. *The Simons Observatory.* 2019, Astro2020 Decadal APC White Paper. ADS

7. S. Hanany et al. incl. **S.E. Clark**. *PICO: Probe of Inflation and Cosmic Origins.* 2019, Astro2020 Decadal APC White Paper. arXiv:1908.07495

6. The Simons Observatory Collaboration, incl. **S.E. Clark**. *The Simons Observatory: Astro2020 Decadal Project Whitepaper.* 2019. arXiv:1907.08284

5. L. Fissel, C.L.H. Hull, **S.E. Clark**, D.T. Chuss et al. *Studying Magnetic Fields in Star Formation and the Turbulent Interstellar Medium.* 2019, Astro2020 Science White Paper. arXiv:1903.08757

4. **S.E. Clark**, C. Heiles, T. Robishaw. *Magnetic Fields and Polarization in the Diffuse Interstellar Medium.* 2019, Astro2020 Science White Paper. arXiv:1903.07671

3. D. Stinebring, S. Chatterjee, **S.E. Clark**., J.M. Cordes, T. Dolch, C. Heiles, [12 authors]. *Twelve Decades: Probing the ISM from kiloparsec to sub-AU scales.* 2019, Astro2020 Science White Paper. arXiv:1903.073701

2. B. Hensley et al. incl. **S.E. Clark**. *Determining the Composition of Interstellar Dust with Far-Infrared Polarimetry.* 2019, Astro2020 Science White Paper. ADS

1. S. Hanany et al. incl. **S.E. Clark**. *PICO: Probe of Inflation and Cosmic Origins.* 2019, Probe class mission study for NASA and 2020 Decadal Panel. arXiv:1902.10541

SCIENTIFIC PRESENTATIONS

Significant presentations, including 59 invited talks/colloquia

Invited Conference Talks

85. Invited Talk, CMB-S4 Collaboration Meeting (*virtual*) March 2021
84. Invited Talk, Arecibo Observatory Open House, Honolulu, Hawaii Jan. 2020
83. Invited Talk, *B*-Modes from Space, Garching, Germany Dec. 2019
82. Invited Talk, IEEE Workshop on Hyperspectral Image and Signal Processing, Amsterdam, The Netherlands Sept. 2019

81. Invited Talk, The Self-Organized Star Formation Process, Orsay, France Sept. 2019
80. Invited Talk, Pathways to the Future of Arecibo Observatory, San Juan, Puerto Rico Feb. 2019
79. Invited Talk, Interstellar Filament Paradigm, Nagoya, Japan Nov. 2018
78. Invited Talk, The Milky Way in the Age of Gaia, Orsay, France Oct. 2018
77. Invited Talk, Gruber Cosmology Conference, Yale University Sept. 2018
76. Invited Talk, Cosmology with CMB-S4, Princeton University Sept. 2018
75. Invited Talk, CMB Foregrounds Workshop, Flatiron CCA, New York, New York June 2018
74. Invited Talk & Panel, PICO Science Meeting, University of Minnesota May 2018
73. Invited Talk, CMB Foregrounds Workshop, San Diego, California Nov. 2017
72. Invited Talk, GMIMS Collaboration Workshop, DRAO, Canada Oct. 2017
71. Invited Talk, Magnetic Fields in the Universe VI, Natal, Brazil Oct. 2017
70. Invited Talk, IAU Symposium 333: Peering Toward Cosmic Dawn, Dubrovnik, Croatia Oct. 2017
69. Invited Talk, The Interstellar Medium Beyond Three Dimensions, Orsay, France July 2017
68. Invited Talk, Midwest Magnetic Fields Workshop, Madison, Wisconsin May 2017
67. Invited Talk, AAS Special Session: New, Fundamental, Cutting-Edge Science from Arecibo Observatory, Grapevine, Texas Jan. 2017
66. Invited Talk, Cosmic Rays, Astrophysical Turbulence and Magnetic Reconnection, Natal, Brazil Dec. 2016
65. Invited Talk, Astronomical Society of New York Prize Talk, Siena College, Albany, New York Nov. 2016
64. Invited Talk, Simons Observatory Meeting, Princeton, New Jersey Nov. 2016
63. Invited Talk, Non-Ideal MHD, Stability, and Dissipation in PPDs, Copenhagen, Denmark Aug. 2014

Invited Colloquia and Seminars

62. Colloquium, Munich Joint Astronomy Colloquium (*virtual*) April 2021
61. Colloquium, Johns Hopkins University (*virtual*) April 2021
60. Colloquium, University of British Columbia (*virtual*) March 2021
59. Invited Talk, Tuesday Astrophysics Seminar, University of Chicago (*virtual*) March 2021
58. Colloquium, Columbia University (*virtual*) Feb. 2021
57. Colloquium, Stanford Physics & Applied Physics (*virtual*) Oct. 2020
56. Colloquium, Caltech March 2020
55. Colloquium, UC Santa Cruz Feb. 2020
54. Colloquium, UC Berkeley Feb. 2020
53. Colloquium, University of Toronto Feb. 2020
52. Colloquium, UC Santa Barbara Jan. 2020
51. Colloquium, Stanford University Jan. 2020
50. Colloquium, University of Virginia/NRAO Nov. 2019
49. Colloquium, Cornell University Nov. 2019
48. Invited Talk, McGill Space Institute Seminar, Montreal, Canada Nov. 2019
47. Invited Talk, Queen's University Seminar, Kingston, Canada Nov. 2019
46. Colloquium, University of Maryland, College Park Oct. 2019
45. Invited Talk, CITA Seminar, Toronto, Canada Oct. 2019
44. Invited Talk, Princeton Gravity Group Seminar, Princeton, New Jersey Feb. 2019
43. Colloquium, University of Rochester Apr. 2018
42. Invited Talk, Princeton University Wednesday Lunch Talk, Princeton, New Jersey Feb. 2018
41. Invited Talk, UC Berkeley TAC Seminar, Berkeley, California Dec. 2017

40. Colloquium, University of Wisconsin - Madison — Nov. 2017
39. Invited Talk, CIERA/Northwestern Seminar, Evanston, Illinois — Oct. 2017
38. Invited Talk, Rutgers Astrophysics Seminar, New Brunswick, New Jersey — Mar. 2017
37. Colloquium, Bates College, Lewiston, Maine — Feb. 2017
36. Invited Talk, NRAO/UVA Seminar, Charlottesville, Virginia — Nov. 2016
35. Invited Talk, Star Formation/ISM Rendezvous Seminar, Princeton, New Jersey — Nov. 2016
34. Invited Talk, OSU CCAPP Price Prize Seminar, Columbus, Ohio — Sept. 2016
33. Invited Talk, Harvard-Smithsonian CfA Galaxies & Cosmology Seminar, Cambridge, Massachussetts — Sept. 2016
32. Invited Talk, CITA Seminar, Toronto, Canada — Aug. 2016
31. Invited Talk, JILA Seminar, Colorado University Boulder, Boulder, Colorado — Feb. 2016
30. Colloquium, American Museum of Natural History, New York, New York — Jan. 2016
29. Invited Talk, Brown Astrophysics Seminar, Providence, Rhode Island — Nov. 2015
28. Invited Talk, IRAP ISM Seminar, Toulouse, France — Oct. 2015
27. Invited Talk, IAS, ENS, and CEA/Saclay Joint ISM Seminar, IAS, Orsay, France — Oct. 2015
26. Invited Talk, PPPL Theory Seminar, Princeton, New Jersey — Dec. 2014

Contributed Talks & Posters

25. Talk, Molecular Clouds, HII Regions, Interstellar Medium, AAS, Honolulu, Hawaii — Jan. 2020
24. Talk, Princeton/IAS Cosmology Lunch, Princeton, New Jersey — Oct. 2019
23. Talk, NASA Hubble Fellowship Program Symposium, Washington, D.C. — Oct. 2019
22. Talk, New Perspectives on Galactic Magnetism, Newcastle upon Tyne, England — June 2019
21. Talk, Hubble Fellows Symposium, Baltimore, Maryland — Mar. 2019
20. Talk, Big Apple Magnetic Fields, New York, New York — Jan. 2019
19. Talk, Hubble Fellows Symposium, Baltimore, Maryland — Mar. 2018
18. Talk, IAS Seminar, Princeton, New Jersey — Sept. 2017
17. Talk, AAS dissertation talk, Dust and Magnetic Fields, Grapevine, Texas — Jan. 2017
16. Talk, Star Formation, Magnetic Fields, and Diffuse Matter in the Galaxy, Madison, Wisconsin — May 2016
15. Talk, Magnetic Fields in the Universe V, Corsica, France — Oct. 2015
14. Talk, Experimental CMB Group, Columbia University, New York, New York — Sept. 2015
13. Talk, IAU Focus Meeting 5, The Legacy of Planck, Honolulu, Hawaii — Aug. 2015
12. Poster, IAU Symposium, From Interstellar Clouds to Star-Forming Galaxies: Universal Processes?, Honolulu, Hawaii — Aug. 2015
11. Talk, Pontifica Universidad Católica, Santiago, Chile — May 2015
10. Talk, Midwest Magnetic Fields Workshop, Madison, Wisconsin — May 2015
9. Poster, NSF Directorate for Mathematical & Physical Sciences, New York, New York — Oct. 2014
8. Poster, Filamentary Structure in Molecular Clouds, NRAO, Charlottesville, Virginia — Oct. 2014
7. Poster, Galactic Science with the SKA and its Pathfinders, Leiden, Netherlands — May 2014
6. Talk, Midwest Magnetic Fields Workshop, Madison, Wisconsin — Apr. 2014
5. Talk, Phases of the ISM Conference, Heidelberg, Germany — July 2013
4. Talk, Senior Research Symposium, Chapel Hill, North Carolina — Apr. 2012
3. Poster, AAS Winter Meeting, Austin, Texas — Jan. 2012
2. Talk, GALFA-HI Collaboration Meeting, Madison, Wisconsin — Aug. 2011
1. Talk, REU Symposium, Arecibo Observatory, Puerto Rico — Aug. 2011

TEACHING EXPERIENCE

Team Leader, Instructor, Introduction to Astrophysics, Wagner Youth Correctional Facility	2019
Instructor, Introduction to Astrophysics, East Jersey State Prison	2018
Math Tutor, Edna Women's Correctional Facility	2018
Guest Lecturer, Columbia University, upper-level undergraduate Galaxies course	2017
Head Teaching Assistant, Columbia Department of Astronomy	2015 – 2016
Guest Lecturer, Hunter College, Unsolved Problems in Astrophysics	2016
Grader, Columbia University, Life in the Universe	2014
Instructor, Columbia University, Observational Astronomy Lab	2014
Instructor, Columbia University, Earth, Moon, & Planets Lab	2013
Grader, Columbia University, Life in the Universe	2013
Teaching Assistant, Columbia University, Galaxies & Cosmology	2013
Teaching Assistant, Columbia University, Stars & Atoms	2012
Instructor, UNC-Chapel Hill, Physics Help Center	2011 – 2012
Teaching Assistant, UNC-Chapel Hill, Calculus-Based Newtonian Mechanics	2011

STUDENTS ADVISED

Elizabeth Meador, Pittsburgh University, graduate student	2021 – present
Rodrigo Córdova Rosado, Princeton University, graduate student	2020 – present
George Halal, Stanford University, graduate student	2020 – present
Doyeon Avery Kim, Columbia University, graduate student	2018 – present
Jessica Campbell, University of Toronto, Ph.D. coadviser with Bryan Gaensler	2017 – present
Alexis Demirjian, Barnard College, undergraduate research	2019
Larry Li, Columbia University, undergraduate research	2016 – 2019
Garrison Grogan, Columbia University, undergraduate research	2016 – 2017
Lowell Schudel, Columbia University, undergraduate research	2014 – 2015

PROFESSIONAL ACTIVITIES

Organizer, Kavli Astrophysics Forum	2021
Organizer, IAS Informal Seminar	2020–2021
SOC, Cosmology with CMB-S4	2020
Board of Trustees, Association of Members of the Institute for Advanced Study	2020 - 2022
Simons Observatory Galactic Science Working Group Co-Leader	2019–present
Member Representative, IAS Diversity Committee	2018–present
SOC, Warm Ionized Medium in Galaxies, Green Bank, West Virginia	2019
Organizer, IAS Informal Seminar	2018–2019
Organizer, The Milky Way in the Age of Gaia, Paris	2018
Organizer, The Interstellar Medium Beyond 3D, Paris	2017
Organizer, Columbia University Weekly Astro-ph Discussion	2016 – 2017

Referee, *ApJ*, *ApJL*, *A&A*, *Nature Astronomy*
Reviewer/Panelist, NASA, NSF

Collaboration leadership roles:
Co-lead, Simons Observatory Galactic Science Working Group
Co-founder and co-lead, Pan-Experiment Galactic Science Group
Lead, Filaments Working Group, Galactic Australian SKA Pathfinder (GASKAP)
Deputy Lead, Magnetic Fields Science Working Group, CCAT-prime

Active collaboration member:
Atacama Cosmology Telescope (ACT), BLAST, CCAT-prime, CMB-S4, Galactic Australian SKA Pathfinder (GASKAP), Global Magneto-Ionic Medium Survey (GMIMS), Probe of Inflation and Cosmic Origins (PICO), Simons Observatory (SO)

SELECTED OUTREACH AND SERVICE

Professional Development Coordinator, SO-NSBP Summer Research Program	2020
Team Leader, Instructor, Prison Teaching Initiative	2018 – 2019
Public Talk, Astronomy on Tap, Trenton, New Jersey	2019
Invited Panelist, Conference for Undergraduate Women in Physics	2018
Volunteer, Reading Team Math Program, Harlem, New York	2016 – 2017
Instructor, Rooftop Variables, Curtis High School, Staten Island, New York	2012 – 2017
Outreach Volunteer, bi-weekly community stargazing, Columbia University	2012 – 2017
Public Lecture, *Our Magnetic Universe*, Columbia Astronomy Outreach Lecture Series	2015
Founder, President, Carolina Women in Physics	2010 – 2012
Member, Social Chair, UNC-Chapel Hill Society of Physics Students	2010 – 2012
Chapter Director, Mentor, UNC-Chapel Hill Strive For College	2009 – 2012

OTHER PUBLISHED WRITING

Interstellar Magnetism, **S.E. Clark**, article, The Institute Letter, Spring 2019
Closing My Eyes, **S.E. Clark**, personal essay, The Washington Post Magazine, May 2009