Susan E. Clark

Curriculum Vitae

School of Natural Sciences
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APPOINTMENTS

Hubble Fellow	2017 – present
Member, Institute for Advanced Study	2017 – present

EDUCATION

Columbia University
Ph.D., Astrophysics — 2017
Dissertation: *Magnetic Fields in the Interstellar Medium*
Advisors: Mary E. Putman, Joshua E.G. Peek
M.A., M.Phil, Astrophysics — 2014

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

Thomas Jefferson High School for Science & Technology — 2008

HONORS, AWARDS AND GRANTS

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

7. **S.E. Clark** & B.S. Hensley. *Mapping the Magnetic Interstellar Medium in Three Dimensions Over the Full Sky with Neutral Hydrogen.* 2019, accepted to ApJ. 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

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

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 45 invited talks/colloquia

Invited Conference Talks

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

Invited Colloquia and Seminars

49. Colloquium, University of Virginia/NRAO — Nov. 2019

48. Colloquium, Cornell University — Nov. 2019
47. Invited Talk, McGill Space Institute Seminar, Montreal, Canada — Nov. 2019
46. Invited Talk, Queen's University Seminar, Kingston, Canada — Nov. 2019
45. Colloquium, University of Maryland, College Park — Oct. 2019
44. Invited Talk, CITA Seminar, Toronto, Canada — Oct. 2019
43. Invited Talk, Princeton Gravity Group Seminar, Princeton, New Jersey — Feb. 2019
42. Colloquium, University of Rochester — Apr. 2018
41. Invited Talk, Princeton University Wednesday Lunch Talk, Princeton, New Jersey — Feb. 2018
40. Invited Talk, UC Berkeley TAC Seminar, Berkeley, California — Dec. 2017
39. Colloquium, University of Wisconsin - Madison — Nov. 2017
38. Invited Talk, CIERA/Northwestern Seminar, Evanston, Illinois — Oct. 2017
37. Invited Talk, Rutgers Astrophysics Seminar, New Brunswick, New Jersey — Mar. 2017
36. Colloquium, Bates College, Lewiston, Maine — Feb. 2017
35. Invited Talk, NRAO/UVA Seminar, Charlottesville, Virginia — Nov. 2016
34. Invited Talk, Star Formation/ISM Rendezvous Seminar, Princeton, New Jersey — Nov. 2016
33. Invited Talk, OSU CCAPP Price Prize Seminar, Columbus, Ohio — Sept. 2016
32. Invited Talk, Harvard-Smithsonian CfA Galaxies & Cosmology Seminar, Cambridge, Massachussetts — Sept. 2016
31. Invited Talk, CITA Seminar, Toronto, Canada — Aug. 2016
30. Invited Talk, JILA Seminar, Colorado University Boulder, Boulder, Colorado — Feb. 2016
29. Colloquium, American Museum of Natural History, New York, New York — Jan. 2016
28. Invited Talk, Brown Astrophysics Seminar, Providence, Rhode Island — Nov. 2015
27. Invited Talk, IRAP ISM Seminar, Toulouse, France — Oct. 2015
26. Invited Talk, IAS, ENS, and CEA/Saclay Joint ISM Seminar, IAS, Orsay, France — Oct. 2015
25. Invited Talk, PPPL Theory Seminar, Princeton, New Jersey — Dec. 2014

Contributed Talks & Posters

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

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

Board of Trustees, Association of Members of the IAS (elected) — 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, *The Astrophysical Journal*, *The Astrophysical Journal Letters*, *Astronomy & Astrophysics*
Reviewer, NASA Earth and Space Science Fellowship, BLAST-TNG shared risk observing proposals

Collaboration member: Galactic Arecibo L-Band Feed Array HI Survey (GALFA-HI), Galactic Australian SKA Pathfinder (GASKAP), Global Magneto-Ionic Medium Survey (GMIMS), Atacama Cosmology Telescope (ACT), Simons Observatory (SO), Probe of Inflation and Cosmic Origins (PICO)

SELECTED OUTREACH AND SERVICE

Team Leader, Instructor, Prison Teaching Initiative	2018 – present
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