

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: <i>Magnetic Fields in the Interstellar Medium</i>	
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
Einstein Fellowship	declined
NSF Graduate Research Fellowship	2012 – 2017
Columbia Dean’s Fellowship	2012 – 2017
ASNY Graduate Student Paper Prize	2016
CCAPP Prize Prize in Cosmology and AstroParticle Physics	2016
PI, VLA Observing Proposal 16A-133, 8 hours	2016
PRL Editors’ Recommendation Paper	2015
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, submitted. [arXiv:1909.11673](https://arxiv.org/abs/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](https://arxiv.org/abs/1902.01409)
5. **S.E. Clark**. *A new probe of line-of-sight magnetic field tangling*. 2018, ApJL 857, L10. [arXiv:1802.00011](https://arxiv.org/abs/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, submitted. [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

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 TALKS

Significant presentations, including 39 invited talks/colloquia

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| 61. Invited Talk, IEEE Workshop on Hyperspectral Image and Signal Processing, Amsterdam, The Netherlands | Sept. 2019 |
| 60. Invited Talk, The Self-Organized Star Formation Process, Orsay, France | Sept. 2019 |
| 59. Talk, New Perspectives on Galactic Magnetism, Newcastle upon Tyne, England | June 2019 |
| 58. Talk, Hubble Fellows Symposium, Baltimore, Maryland | Mar. 2019 |
| 57. Invited Talk, Pathways to the Future of Arecibo Observatory, San Juan, Puerto Rico | Feb. 2019 |
| 56. Invited Talk, Princeton Gravity Group Seminar, Princeton, New Jersey | Feb. 2019 |
| 55. Talk, Big Apple Magnetic Fields, New York, New York | Jan. 2019 |
| 54. Invited Talk, Interstellar Filament Paradigm, Nagoya, Japan | Nov. 2018 |
| 53. Invited Talk, The Milky Way in the Age of Gaia, Orsay, France | Oct. 2018 |
| 52. Invited Talk, Gruber Cosmology Conference, Yale University | Sept. 2018 |
| 51. Invited Talk, Cosmology with CMB-S4, Princeton University | Sept. 2018 |
| 50. Invited Talk, CMB Foregrounds Workshop, Flatiron CCA, New York, New York | June 2018 |
| 49. Invited Talk & Panel, PICO Science Meeting, University of Minnesota | May 2018 |
| 48. Colloquium, University of Rochester | Apr. 2018 |
| 47. Talk, Hubble Fellows Symposium, Baltimore, Maryland | Mar. 2018 |
| 46. Invited Talk, Princeton University Wednesday Lunch Talk, Princeton, New Jersey | Feb. 2018 |
| 45. Invited Talk, UC Berkeley TAC Seminar, Berkeley, California | Dec. 2017 |
| 44. Invited Talk, CMB Foregrounds Workshop, San Diego, California | Nov. 2017 |
| 43. Colloquium, University of Wisconsin - Madison | Nov. 2017 |
| 42. Invited Talk, GMIMS Collaboration Workshop, DRAO, Canada | Oct. 2017 |
| 41. Invited Talk, CIERA/Northwestern Seminar, Evanston, Illinois | Oct. 2017 |
| 40. Invited Talk, Magnetic Fields in the Universe VI, Natal, Brazil | Oct. 2017 |
| 39. Invited Talk, IAU Symposium 333: Peering Toward Cosmic Dawn, Dubrovnik, Croatia | Oct. 2017 |
| 38. Talk, IAS Seminar, Princeton, New Jersey | Sept. 2017 |
| 37. Invited Talk, The Interstellar Medium Beyond Three Dimensions, Orsay, France | July 2017 |
| 36. Invited Talk, Midwest Magnetic Fields Workshop, Madison, Wisconsin | May 2017 |
| 35. Invited Talk, Rutgers Astrophysics Seminar, New Brunswick, New Jersey | Mar. 2017 |
| 34. Colloquium, Bates College, Lewiston, Maine | Feb. 2017 |
| 33. Invited Talk, AAS Special Session: New, Fundamental, Cutting-Edge Science from Arecibo Observatory, Grapevine, Texas | Jan. 2017 |

32. Talk, AAS dissertation talk, Dust and Magnetic Fields, Grapevine, Texas	Jan. 2017
31. Invited Talk, Cosmic Rays, Astrophysical Turbulence and Magnetic Reconnection, Natal, Brazil	Dec. 2016
30. Invited Talk, NRAO/UVA Seminar, Charlottesville, Virginia	Nov. 2016
29. Invited Talk, ASNY Prize Talk, Siena College, Albany, New York	Nov. 2016
28. Invited Talk, Star Formation/ISM Rendezvous Seminar, Princeton, New Jersey	Nov. 2016
27. Invited Talk, Simons Observatory Meeting, Princeton, New Jersey	Nov. 2016
26. Invited Talk, OSU CCAPP Price Prize Seminar, Columbus, Ohio	Sept. 2016
25. Invited Talk, Harvard-Smithsonian CfA Galaxies & Cosmology Seminar, Cambridge, Massachusetts	Sept. 2016
24. Invited Talk, CITA Seminar, Toronto, Canada	Aug. 2016
23. Talk, Star Formation, Magnetic Fields, and Diffuse Matter in the Galaxy, Madison, Wisconsin	May 2016
22. Invited Talk, JILA Seminar, Colorado University Boulder, Boulder, Colorado	Feb. 2016
21. Colloquium, American Museum of Natural History, New York, New York	Jan. 2016
20. Invited Talk, Brown Astrophysics Seminar, Providence, Rhode Island	Nov. 2015
19. Invited Talk, IRAP ISM Seminar, Toulouse, France	Oct. 2015
18. Talk, Magnetic Fields in the Universe V, Corsica, France	Oct. 2015
17. Invited Talk, IAS, ENS, and CEA/Saclay Joint ISM Seminar, IAS, Orsay, France	Oct. 2015
16. Talk, Experimental CMB Journal Club, Columbia University, New York, New York	Sept. 2015
15. Talk, IAU Focus Meeting 5, The Legacy of Planck, Honolulu, Hawaii	Aug. 2015
14. Poster, IAU Symposium, From Interstellar Clouds to Star-Forming Galaxies: Universal Processes?, Honolulu, Hawaii	Aug. 2015
13. Talk, Pontifica Universidad Católica, Santiago, Chile	May 2015
12. Talk, Midwest Magnetic Fields Workshop, Madison, Wisconsin	May 2015
11. Invited Talk, PPPL Theory Seminar, Princeton, New Jersey	Dec. 2014
10. Poster, NSF Directorate for Mathematical & Physical Sciences, New York, New York	Oct. 2014
9. Poster, Filamentary Structure in Molecular Clouds, NRAO, Charlottesville, Virginia	Oct. 2014
8. Invited Talk, Non-Ideal MHD, Stability, and Dissipation in PPDs, Copenhagen, Denmark	Aug. 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
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, PhD coadviser with Bryan Gaensler	2017 – present
Larry Li, Columbia University, undergraduate research	2016 – present
Garrison Grogan, Columbia University, undergraduate research	2016 – 2017
Lowell Schudel, Columbia University, undergraduate research	2014 – 2015

PROFESSIONAL ACTIVITIES

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, <i>The Astrophysical Journal</i> , <i>The Astrophysical Journal Letters</i> , <i>Astronomy & Astrophysics</i>	

SELECTED OUTREACH AND SERVICE

Team Leader, Instructor, Prison Teaching Initiative	2018 – present
Public Talk, Astronomy on Tap, Trenton, New Jersey	2019
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, <i>Our Magnetic Universe</i> , Columbia Astronomy Outreach Lecture Series	2015
Founder, President, UNC-Chapel Hill 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