

SUSAN E. CLARK

Curriculum Vitae

School of Natural Sciences
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APPOINTMENTS

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

EDUCATION

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| 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

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| 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 Prize 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, ApJ 887, 2. [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, 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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/1903.073701)
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](https://arxiv.org/abs/1902.10541)

SCIENTIFIC PRESENTATIONS

Significant presentations, including 45 invited talks/colloquia

Invited Conference Talks

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| 70. Invited Talk, <i>B</i> -Modes from Space, Garching, Germany | Dec. 2019 |
| 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

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| 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, Massachusetts | 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

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| 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, Pontificia 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 |

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| 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

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| 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

| | |
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| Doyeon Avery Kim, Columbia University, graduate student | 2018 – present |
| Jessica Campbell, University of Toronto, Ph.D. coadvisor 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

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

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| 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, <i>Our Magnetic Universe</i> , 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