

Stanford



Susan E. Clark

Assistant Professor of Physics

Bio

ACADEMIC APPOINTMENTS

- Assistant Professor, Physics

LINKS

- Cosmic Magnetism & Interstellar Physics Group: <https://clarkgroup.stanford.edu/>

Teaching

COURSES

2023-24

- Computational Physics: PHYSICS 113 (Spr)
- Stars and Planets in a Habitable Universe: PHYSICS 15 (Aut)

2022-23

- Stars and Planets in a Habitable Universe: PHYSICS 15 (Win)

2021-22

- Special Topics in Astrophysics: Physics of The Interstellar Medium and Intergalactic Medium: PHYSICS 367 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Elise Darragh-Ford, Anthony Flores, Richie Wang, Josephine Wong

Postdoctoral Faculty Sponsor

Iryna Butsky, Jae Yeon Kim, Sergio Martin Alvarez, Mehrnoosh Tahani

Doctoral Dissertation Advisor (AC)

George Halal, Minjie Lei, Marta Nowotka

Publications

PUBLICATIONS

- **The BLAST Observatory: A Sensitivity Study for Far-IR Balloon-borne Polarimeters** *PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF THE PACIFIC*
Coppi, G., Dicker, S., Aguirre, J. E., Austermann, J. E., Beall, J. A., Clark, S. E., Cox, E. G., Devlin, M. J., Fissel, L. M., Galitzki, N., Hensley, B. S., Hubmayr, J., Molinari, et al

2024; 136 (3)

- **The Atacama Cosmology Telescope: A Measurement of the DR6 CMB Lensing Power Spectrum and Its Implications for Structure Growth** *ASTROPHYSICAL JOURNAL*
Qu, F., Sherwin, B. D., Madhavacheril, M. S., Han, D., Crowley, K. T., Abril-Cabezas, I., Ade, P. R., Aiola, S., Alford, T., Amiri, M., Amodeo, S., An, R., Atkins, et al
2024; 962 (2)
- **The Atacama Cosmology Telescope: DR6 Gravitational Lensing Map and Cosmological Parameters** *ASTROPHYSICAL JOURNAL*
Madhavacheril, M. S., Qu, F. J., Sherwin, B. D., Maccrann, N., Li, Y., Abril-Cabezas, I., Ade, P. R., Aiola, S., Alford, T., Amiri, M., Amodeo, S., An, R., Atkins, et al
2024; 962 (2)
- **Filamentary Dust Polarization and the Morphology of Neutral Hydrogen Structures** *ASTROPHYSICAL JOURNAL*
Halal, G., Clark, S. E., Cukierman, A., Beck, D., Kuo, C.
2024; 961 (1)
- **The Atacama Cosmology Telescope: Galactic Dust Structure and the Cosmic PAH Background in Cross-correlation with WISE** *ASTROPHYSICAL JOURNAL*
Rosado, R., Hensley, B. S., Clark, S. E., Duivenvoorden, A. J., Atkins, Z., Battistelli, E., Choi, S. K., Dunkley, J., Hervias-Caimapo, C., Li, Z., Louis, T., Naess, S., Page, et al
2024; 960 (2)
- **The kinematic structure of magnetically aligned H I filaments** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Kim, D. A., Clark, S. E., Putman, M. E., Li, L.
2023; 526 (3): 4345-4358
- **A new method for spatially resolving the turbulence-driving mixture in the ISM with application to the Small Magellanic Cloud** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Gerrard, I. A., Federrath, C., Pingel, N. M., McClure-Griffiths, N. M., Marchal, A., Joncas, G., Clark, S. E., Stanimirovic, S., Lee, M., van Loon, J., Dickey, J., Denes, H., Ma, et al
2023; 526 (1): 982-999
- **The Structure of Magnetic Fields in Spiral Galaxies: A Radio and Far-infrared Polarimetric Analysis** *ASTROPHYSICAL JOURNAL*
Surgent, W., Lopez-Rodriguez, E., Clark, S. E.
2023; 954 (1)
- **Tensor-to-scalar ratio forecasts for extended LiteBIRD frequency configurations** *ASTRONOMY & ASTROPHYSICS*
Fuskeland, U., Aumont, J., Aurlien, R., Baccigalupi, C., Banday, A. J., Eriksen, H. K., Errard, J., Genova-Santos, R. T., Hasebe, T., Hubmayr, J., Imada, H., Krachmalnicoff, N., Lamagna, et al
2023; 676
- **Polarization fraction of Planck Galactic cold clumps and forecasts for the Simons Observatory** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Clancy, J., Puglisi, G., Clark, S. E., Coppi, G., Fabbian, G., Hervias-Caimapo, C., Hill, J. C., Nati, F., Reichardt, C. L.
2023; 524 (3): 3712-3723
- **Extragalactic Magnetism with SOFIA (SALSA Legacy Program). V. First Results on the Magnetic Field Orientation of Galaxies** *ASTROPHYSICAL JOURNAL*
Borlaff, A. S., Lopez-Rodriguez, E., Beck, R., Clark, S. E., Ntormousi, E., Tassis, K., Martin-Alvarez, S., Tahani, M., Dale, D. A., del Moral-Castro, I., Roman-Duval, J., Marcum, P. M., Beckman, et al
2023; 952 (1)
- **Probing cosmic inflation with the LiteBIRD cosmic microwave background polarization survey** *PROGRESS OF THEORETICAL AND EXPERIMENTAL PHYSICS*
Allys, E., Arnold, K., Aumont, J., Aurlien, R., Azzoni, S., Baccigalupi, C., Banday, A. J., Banerji, R., Barreiro, R. B., Bartolo, N., Bautista, L., Beck, D., Beckman, et al
2023; 2023 (4)
- **Probing the Cold Neutral Medium through H I Emission Morphology with the Scattering Transform** *ASTROPHYSICAL JOURNAL*
Lei, M., Clark, S. E.
2023; 947 (2)

- **Magnetic Misalignment of Interstellar Dust Filaments** *ASTROPHYSICAL JOURNAL*
Cukierman, A. J., Clark, S. E., Halal, G.
2023; 946 (2)
- **H I filaments as potential compass needles? Comparing the magnetic field structure of the Small Magellanic Cloud to the orientation of GASKAP-H I filaments** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Ma, Y. K., McClure-Griffiths, N. M., Clark, S. E., Gibson, S. J., van Loon, J., Soler, J. D., Putman, M. E., Dickey, J. M., Lee, M., Jameson, K. E., Uscanga, L., Dempsey, J., Denes, et al
2023; 521 (1): 60-83
- **BICEP/Keck. XVI. Characterizing Dust Polarization through Correlations with Neutral Hydrogen** *ASTROPHYSICAL JOURNAL*
Ade, P. R., Ahmed, Z., Amiri, M., Barkats, D., Thakur, R., Bischoff, C. A., Beck, D., Bock, J. J., Boenish, H., Bullock, E., Buza, V., Cheshire, J. R., Clark, et al
2023; 945 (1)
- **CCAT-prime Collaboration: Science Goals and Forecasts with Prime-Cam on the Fred Young Submillimeter Telescope** *ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES*
Aravena, M. E., Ausermann, J. E., Basu, K., Battaglia, N., Beringue, B., Bertoldi, F., Bigiel, F. C., Bond, J., Breyse, P. C., Broughton, C. C., Bustos, R., Chapman, S. K., Charmetant, et al
2023; 264 (1)
- **Extragalactic Magnetism with SOFIA (SALSA Legacy Program): The Magnetic Fields in the Multiphase Interstellar Medium of the Antennae Galaxies*** *ASTROPHYSICAL JOURNAL LETTERS*
Lopez-Rodriguez, E., Borlaff, A. S., Beck, R., Reach, W. T., Mao, S., Ntormousi, E., Tassis, K., Martin-Alvarez, S., Clark, S. E., Dale, D. A., del Moral-Castro, I.
2023; 942 (1)
- **Optical Characterization of OMT-Coupled TES Bolometers for LiteBIRD** *JOURNAL OF LOW TEMPERATURE PHYSICS*
Hubmayr, J., Ade, P. R., Adler, A., Allys, E., Alonso, D., Arnold, K., Auguste, D., Aumont, J., Aurlien, R., Ausermann, J. E., Azzoni, S., Baccigalupi, C., Banday, et al
2022
- **Extragalactic Magnetism with SOFIA (SALSA Legacy Program). III. First Data Release and On-the-fly Polarization Mapping Characterization*** *ASTROPHYSICAL JOURNAL*
Lopez-Rodriguez, E., Clarke, M., Shenoy, S., Vacca, W., Coude, S., Arneson, R., Ashton, P., Eftekharzadeh, S., Beck, R., Beckman, J. E., Borlaff, A. S., Clark, S. E., Dale, et al
2022; 936 (1)
- **Extragalactic Magnetism with SOFIA (SALSA Legacy Program). IV. Program Overview and First Results on the Polarization Fraction*** *ASTROPHYSICAL JOURNAL*
Lopez-Rodriguez, E., Mao, S., Beck, R., Borlaff, A. S., Ntormousi, E., Tassis, K., Dale, D. A., Roman-Duval, J., Subramanian, K., Martin-Alvarez, S., Marcum, P. M., Clark, S. E., Reach, et al
2022; 936 (1)
- **The width of Herschel filaments varies with distance** *ASTRONOMY & ASTROPHYSICS*
Panopoulou, G., Clark, S. E., Hacar, A., Heitsch, F., Kainulainen, J., Ntormousi, E., Seifried, D., Smith, R. J.
2022; 663
- **A Study of 90 GHz Dust Emissivity on Molecular Cloud and Filament Scales** *ASTROPHYSICAL JOURNAL*
Lowe, I., Mason, B., Bhandarkar, T., Clark, S. E., Devlin, M., Dicker, S. R., Duff, S. M., Friesen, R., Hacar, A., Hensley, B., Mroczkowski, T., Naess, S., Romero, et al
2022; 929 (1)
- **The Simons Observatory: Galactic Science Goals and Forecasts** *ASTROPHYSICAL JOURNAL*
Hensley, B. S., Clark, S. E., Fanfani, V., Krachmalnicoff, N., Fabbian, G., Poletti, D., Puglisi, G., Coppi, G., Nibauer, J., Gerasimov, R., Galitzki, N., Choi, S. K., Ashton, et al
2022; 929 (2)
- **A Comparison of Multiphase Magnetic Field Tracers in a High Galactic Latitude Region of the Filamentary Interstellar Medium** *ASTROPHYSICAL JOURNAL*
Campbell, J. L., Clark, S. E., Gaensler, B. M., Marchal, A., Van Eck, C. L., Deshpande, A. A., George, S. J., Gibson, S. J., Ricci, R., Stil, J. M., Taylor, A. R.
2022; 927 (1)

- **GASKAP-HI pilot survey science I: ASKAP zoom observations of HI emission in the Small Magellanic Cloud** *PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF AUSTRALIA*
Pingel, N. M., Dempsey, J., McClure-Griffiths, N. M., Dickey, J. M., Jameson, K. E., Arce, H., Anglada, G., Bland-Hawthorn, J., Breen, S. L., Buckland-Willis, F., Clark, S. E., Dawson, J. R., Denes, et al
2022; 39
- **The Hough Stream Spotter: A New Method for Detecting Linear Structure in Resolved Stars and Application to the Stellar Halo of M31** *ASTROPHYSICAL JOURNAL*
Pearson, S., Clark, S. E., Demirjian, A. J., Johnston, K., Ness, M. K., Starkeburg, T. K., Williams, B. F., Ibata, R. A.
2022; 926 (2)
- **GASKAP Pilot Survey Science. II. ASKAP Zoom Observations of Galactic 21 cm Absorption** *ASTROPHYSICAL JOURNAL*
Dickey, J. M., Dempsey, J. M., Pingel, N. M., McClure-Griffiths, N. M., Jameson, K., Dawson, J. R., Denes, H., Clark, S. E., Joncas, G., Leahy, D., Lee, M., Miville-Deschenes, M., Stanimirovic, et al
2022; 926 (2)
- **The width of Herschel filaments varies with distance** *ASTRONOMY & ASTROPHYSICS*
Panopoulou, G., Clark, S. E., Hacar, A., Heitsch, F., Kainulainen, J., Ntormousi, E., Seifried, D., Smith, R. J.
2022; 657
- **Extragalactic Magnetism with SOFIA (Legacy Program)-II: A Magnetically Driven Flow in the Starburst Ring of NGC 1097*** *ASTROPHYSICAL JOURNAL*
Lopez-Rodriguez, E., Beck, R., Clark, S. E., Hughes, A., Borlaff, A. S., Ntormousi, E., Grosset, L., Tassis, K., Beckman, J. E., Subramanian, K., Dale, D., Diaz-Santos, T.
2021; 923 (2)
- **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** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Thomson, A. M., Landecker, T. L., McClure-Griffiths, N. M., Dickey, J. M., Campbell, J. L., Carretti, E., Clark, S. E., Federrath, C., Gaensler, B. M., Han, J. L., Haverkorn, M., Hill, A. S., Mao, et al
2021; 507 (3): 3495-3518
- **Extragalactic Magnetism with SOFIA (Legacy Program). I. The Magnetic Field in the Multiphase Interstellar Medium of M51*** *ASTROPHYSICAL JOURNAL*
Borlaff, A. S., Lopez-Rodriguez, E., Beck, R., Stepanov, R., Ntormousi, E., Hughes, A., Tassis, K., Marcum, P. M., Grosset, L., Beckman, J. E., Proudfoot, L., Clark, S. E., Diaz-Santos, et al
2021; 921 (2)
- **The Atacama Cosmology Telescope: Microwave Intensity and Polarization Maps of the Galactic Center** *ASTROPHYSICAL JOURNAL*
Guan, Y., Clark, S. E., Hensley, B. S., Gallardo, P. A., Naess, S., Duell, C. J., Aiola, S., Atkins, Z., Calabrese, E., Choi, S. K., Cothard, N. F., Devlin, M., Duivenvoorden, et al
2021; 920 (1)
- **The Origin of Parity Violation in Polarized Dust Emission and Implications for Cosmic Birefringence** *ASTROPHYSICAL JOURNAL*
Clark, S. E., Kim, C., Hill, J., Hensley, B. S.
2021; 919 (1)
- **Evidence for line-of-sight frequency decorrelation of polarized dust emission in Planck data** *ASTRONOMY & ASTROPHYSICS*
Pelgrims, Clark, S. E., Hensley, B. S., Panopoulou, G., Pavlidou, Tassis, K., Eriksen, H. K., Wehus, I. K.
2021; 647
- **The Atacama Cosmology Telescope: a measurement of the Cosmic Microwave Background power spectra at 98 and 150 GHz** *JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS*
Choi, S. K., Hasselfield, M., Ho, S., Koopman, B., Lungu, M., Abitbol, M. H., Addison, G. E., Ade, P. R., Aiola, S., Alonso, D., Amiri, M., Amodeo, S., Angile, et al
2020
- **The Atacama Cosmology Telescope: DR4 maps and cosmological parameters** *JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS*
Aiola, S., Calabrese, E., Maurin, L., Naess, S., Schmitt, B. L., Abitbol, M. H., Addison, G. E., Ade, P. R., Alonso, D., Amiri, M., Amodeo, S., Angile, E., Austermann, et al
2020

- **Mapping the Magnetic Interstellar Medium in Three Dimensions over the Full Sky with Neutral Hydrogen** *ASTROPHYSICAL JOURNAL*
Clark, S. E., Hensley, B. S.
2019; 887 (2)
- **Small-scale H I Channel Map Structure Is Cold: Evidence from Na I Absorption at High Galactic Latitudes** *ASTROPHYSICAL JOURNAL LETTERS*
Peek, J. G., Clark, S. E.
2019; 886 (1)
- **Through thick or thin: multiple components of the magneto-ionic medium towards the nearby H II region Sharpless 2-27 revealed by Faraday tomography** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Thomson, A. M., Landecker, T. L., Dickey, J. M., McClure-Griffiths, N. M., Wolleben, M., Carretti, E., Fletcher, A., Federrath, C., Hill, A. S., Mao, S. A., Gaensler, B. M., Haverkorn, M., Clark, et al
2019; 487 (4): 4751-4767
- **The Physical Nature of Neutral Hydrogen Intensity Structure** *ASTROPHYSICAL JOURNAL*
Clark, S. E., Peek, J. G., Miville-Deschenes, M.
2019; 874 (2)
- **A New Probe of Line-of-sight Magnetic Field Tangling** *ASTROPHYSICAL JOURNAL LETTERS*
Clark, S. E.
2018; 857 (1)
- **Galactic neutral hydrogen and the magnetic ISM foreground**
Clark, S. E., Jelic, VanDerHulst, T.
CAMBRIDGE UNIV PRESS.2018: 146-150
- **The GALFA-HI Survey Data Release 2** *ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES*
Peek, J. G., Babler, B. L., Zheng, Y., Clark, S. E., Douglas, K. A., Korpela, E. J., Putman, M. E., Stanimirovic, S., Gibson, S. J., Heiles, C.
2018; 234 (1)
- **The Weakly Nonlinear Magnetorotational Instability in a Local Geometry** *ASTROPHYSICAL JOURNAL*
Clark, S. E., Oishi, J. S.
2017; 841 (1)
- **The Weakly Nonlinear Magnetorotational Instability in a Global, Cylindrical Taylor-Couette Flow** *ASTROPHYSICAL JOURNAL*
Clark, S. E., Oishi, J. S.
2017; 841 (1)
- **Three-dimensional orientation of compact high velocity clouds** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Heitsch, F., Bartell, B., Clark, S. E., Peek, J. G., Cheng, D., Putman, M.
2016; 462 (1): L46-L50
- **Matching dust emission structures and magnetic field in high-latitude cloud L1642: comparing Herschel and Planck maps** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Malinen, J., Montier, L., Montillaud, J., Juvela, M., Ristorcelli, I., Clark, S. E., Berne, O., Bernard, J., Pelkonen, V., Collins, D. C.
2016; 460 (2): 1934-1945
- **Neutral Hydrogen Structures Trace Dust Polarization Angle: Implications for Cosmic Microwave Background Foregrounds** *PHYSICAL REVIEW LETTERS*
Clark, S. E., Hill, J., Peek, J. G., Putman, M. E., Babler, B. L.
2015; 115 (24): 241302
- **Quantifying the Magnetic Alignment of HI and Dust in the Diffuse ISM**
Clark, S. E., Peek, J. G., Hill, J., Putman, M. E., Jablonka, P., Andre, P., VanDerTak, F.
CAMBRIDGE UNIV PRESS.2015
- **MAGNETICALLY ALIGNED HI FIBERS AND THE ROLLING HOUGH TRANSFORM** *ASTROPHYSICAL JOURNAL*
Clark, S. E., Peek, J. G., Putman, M. E.
2014; 789 (1)

- **PHYSICAL PROPERTIES OF COMPLEX C HALO CLOUDS** *ASTRONOMICAL JOURNAL*
Hsu, W., Putman, M. E., Heitsch, F., Stanimirovic, S., Peek, J. G., Clark, S. E.
2011; 141 (2)