

# Stanford

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## Susan E. Clark

Assistant Professor of Physics

### Bio

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#### ACADEMIC APPOINTMENTS

- Assistant Professor, Physics

#### LINKS

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

### Teaching

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#### 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

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#### PUBLICATIONS

- **The first degree-scale starlight-polarization-based tomography map of the magnetized interstellar medium** *ASTRONOMY & ASTROPHYSICS*  
Pelgrims, V., Mandarakas, N., Skalidis, R., Tassis, K., Panopoulou, G. V., Pavlidou, V., Blinov, D., Kiehlmann, S., Clark, S. E., Hensley, B. S., Romanopoulos, S., Basyrov, A., Eriksen, et al

2024; 684

● **Zero-polarization candidate regions for the calibration of wide-field optical polarimeters** *ASTRONOMY & ASTROPHYSICS*

Mandarakas, N., Panopoulou, G. V., Pelgrims, V., Potter, S. B., Pavlidou, V., Ramaprakash, A., Tassis, K., Blinov, D., Kiehlmann, S., Koutsiona, E., Maharana, S., Romanopoulos, S., Skalidis, et al

2024; 684

● **Atacama Cosmology Telescope: High-resolution component-separated maps across one third of the sky** *PHYSICAL REVIEW D*

Coulton, W., Madhavacheril, M. S., Duivenvoorden, A. J., Hill, J., Abril-Cabezas, I., Ade, P. R., Aiola, S., Alford, T., Amiri, M., Amodeo, S., An, R., Atkins, Z., Austermann, et al

2024; 109 (6)

● **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)

● **On the evolution of the observed mass-to-length relationship for star-forming filaments** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*

Feng, J., Smith, R. J., Hacar, A., Clark, S. E., Seifried, D.

2024; 528 (4): 6370-6387

● **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., Austermann, J. E., Basu, K., Battaglia, N., Beringue, B., Bertoldi, F., Bigiel, F. C., Bond, J., Breysse, 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., Ally, E., Alonso, D., Arnold, K., Auguste, D., Aumont, J., Aurlien, R., Austermann, J. E., Azzoni, S., Baccigalupi, C., Banday, et al  
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- **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., Starkenburg, 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., Havercorn, 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., Proudfit, 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 Hii 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., Havercorn, 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)