

# Xudong Sun, Ph.D.

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## HISTORY OF EMPLOYMENT

<b>Assistant Astronomer</b> , Institute for Astronomy, University of Hawai'i	2017-now
<b>Research Scientist</b> , Hansen Experimental Physics Lab, Stanford University	2012-2017
<b>Resident Observer</b> , <i>Wilcox Solar Observatory</i> , Stanford University	2009-2012

## DEGREES

<b>Stanford University</b> , Ph.D. in Physics	2012
<b>University of Science and Technology of China</b> , B.S. in Earth and Space Sciences	2005

## NARRATIVE OF RESEARCH EXPERIENCE

Dr. Sun's research combines spectropolarimetric observation and numerical modeling to study the solar/stellar magnetic fields. His work on the role of active region magnetic fields in solar eruptions has been widely cited. He is a recipient of the 2019 NSF CAREER Award, and the 2022 University of Hawai'i Board of Regents Medal for Excellence in Research.

Dr. Sun is a science team member of the Helioseismic and Magnetic Imager aboard NASA's *Solar Dynamics Observatory*, and a Science Working Group member of NSF's *Inouye Solar Telescope (DKIST)*. He is currently the Principle Investigator of five NASA/NSF grants with a total support of \$2.3M. His research group is working on a diverse set of topics, including: charting the magnetic landscape of the solar polar region, developing Deep-Learning inversion models for *DKIST* data, and exploring the mechanism of stellar coronal mass ejections.

## KEY PUBLICATIONS [ADS] [GOOGLE SCHOLAR]

<b>Sun, X.</b> , Török, T., & DeRosa, M. L. "Torus-Stable Zone Above Starspots", <i>Mon. Not. R. Astron. Soc.</i> , <b>509</b> , 5075	2022
<b>Sun, X.</b> , Liu, Y., Milić, I., & Griñón-Marín, A. B. "Are the Magnetic Fields Radial in the Solar Polar Region?", <i>Res. Note AAS</i> , <b>5</b> , 134	2021
<b>Sun, X.</b> , & Cheung, M. C. M. "Non-Neutralized Electric Current of Active Regions Explained as a Projection Effect", <i>Sol. Phys.</i> , <b>296</b> , 7	2021
Rast, M., et al. (including <b>Sun, X.</b> ) "Critical Science Plan for the <i>Daniel K. Inouye Solar Telescope (DKIST)</i> ", <i>Sol. Phys.</i> , <b>296</b> , 70	2021
<b>Sun, X.</b> , & Norton, A. A. "Super-flaring Active Region 12673 Has One of the Fastest Magnetic Flux Emergence Ever Observed", <i>Res. Note AAS</i> , <b>1</b> , 24	2017

<b>Sun, X.</b> , Hoeksema, J. T., Liu, Y., Kazachenko, M., & Chen, R. “Investigating the Magnetic Imprints of Major Solar Eruptions with <i>SDO</i> /HMI High-Cadence Vector Magnetograms”, <i>Astrophys. J.</i> , <b>839</b> , 67	2017
<b>Sun, X.</b> , Bobra, M. G., Hoeksema, J. T., et al. “Why Is the Great Solar Active Region 12192 Flare-rich but CME-poor?”, <i>Astrophys. J. Lett.</i> , <b>804</b> , L28	2015
<b>Sun, X.</b> , Hoeksema, J. T., Liu, Y., & Zhao, J. “On Polar Magnetic Field Reversal and Surface Flux Transport During Solar Cycle 24”, <i>Astrophys. J.</i> , <b>798</b> , 114	2015
Fisher, G. H., Abbett, W. P., Bercik, D. J., et al. (including <b>Sun, X.</b> ) “The Coronal Global Evolutionary Model: Using HMI Vector Magnetogram and Doppler Data to Model the Buildup of Free Magnetic Energy in the Solar Corona”, <i>Space Weather</i> , <b>13</b> , 369	2015
Bobra, M. G., <b>Sun, X.</b> , Hoeksema, J. T., Turmon, M., Liu, Y., Hayashi, K., Barnes, G., & Leka, K. D. “The Helioseismic and Magnetic Imager (HMI) Vector Magnetic Field Pipeline: SHARPs – Space-Weather HMI Active Region Patches”, <i>Sol. Phys.</i> , <b>289</b> , 3549	2014
Hoeksema, J. T., Liu, Y., Hayashi, K., <b>Sun, X.</b> , et al. “The Helioseismic and Magnetic Imager (HMI) Vector Magnetic Field Pipeline: Overview and Performance”, <i>Sol. Phys.</i> , <b>289</b> , 3483	2014
<b>Sun, X.</b> , Hoeksema, J. T., Liu, Y., Aulanier, G., Su, Y., Hannah, I. G., & Hock, R. A. “Hot Spine Loops and the Nature of a Late-phase Solar Flare”, <i>Astrophys. J.</i> , <b>778</b> , 139	2013
<b>Sun, X.</b> , Hoeksema, J. T., Liu, Y., Chen, Q., & Hayashi, K. “A Non-radial Eruption in a Quadrupolar Magnetic Configuration with a Coronal Null”, <i>Astrophys. J.</i> , <b>757</b> , 149	2012
<b>Sun, X.</b> , Hoeksema, J. T., Liu, Y., et al. “Evolution of Magnetic Field and Energy in a Major Eruptive Active Region Based on <i>SDO</i> /HMI Observation”, <i>Astrophys. J.</i> , <b>748</b> , 77	2012
<b>Sun, X.</b> , Liu, Y., Hoeksema, J. T., Hayashi, K., & Zhao, X. “A New Method for Polar Field Interpolation”, <i>Sol. Phys.</i> , <b>270</b> , 9	2011

## PROFESSIONAL SOCIETY MEMBERSHIPS

American Geophysical Union (AGU)	2006-now
American Astronomical Society (AAS), Solar Physics Division (SPD)	2007-now
International Astronomical Union (IAU)	2018-now

## HONORS

University of Hawai'i Board of Regents Medal for Excellence in Research	2022
NSF CAREER Award	2018
National Academy of Science New Leaders in Space Science	2018
NASA RHG Exceptional Achievement for Science to the <i>SDO</i> Team	2016
AAS/SPD <i>Metcalf</i> Lectureship	2013
NASA Group Achievement Award to the <i>SDO</i> Science Investigation Teams	2012
AGU Outstanding Student Paper Award	2008