



PHYSICS
COLORADO STATE UNIVERSITY

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**From Fort Collins to England to Chicago: Choosing My Own Adventure
in Computational Stellar Astrophysics and Outreach**

Maria Weber

The University of Chicago & Adler Planetarium

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120 Engineering (Hammond Auditorium)

Abstract

Our Sun is a magnetic star. Rotation, global-scale plasma motions, and shearing are all thought to play significant roles in the generation of this magnetism. Portions of this magnetic field rise to the surface, where it may be observed as sunspots and serve as the launching site for strong solar eruptions. The Kepler mission has revolutionized the field of exoplanet research while providing many detailed observations of about 100,000 stars. From such observations, we now know that many solar-type stars exhibit starspots and cyclic periods of magnetic activity. Yet, there are still many puzzles yet to be solved in stellar dynamo theory. Numerical simulations are a powerful tool for exploring the magnetic processes that may be at work in stellar interiors. I will discuss my computational research efforts to unlock the link between stellar fluid motions, dynamo action, and magnetic flux emergence in the Sun down to the smallest fully convective stars. This journey has taken me from a Colorado State University graduate student, to Boulder, to England, and now to Chicago. Along the way, I discovered a passion for outreach and science communication. I will also share my work to promote the participation of women in STEM and to develop visualizations of astrophysical data and simulations at the Adler Planetarium.



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Biography

Dr. Maria Weber received her B.S. in physics and philosophy from the University of Evansville, Evansville, IN in 2008 and her Ph.D. in physics from Colorado State University in 2014. From 2010 – 2014, she was a graduate research fellow at High Altitude Observatory/NCAR in Boulder where she conducted her thesis research in solar physics under the supervision of Dr. Yuhong Fan (HAO), Dr. Mark Miesch (NOAA), and Dr. David Krueger (CSU). She was a postdoctoral research fellow at the University of Exeter, Exeter, UK from 2014-2017. There she became very active in outreach efforts and applied her solar physics knowledge to study magnetism in small, fully convective M dwarfs. In 2017 She was awarded a National Science Foundation Astronomy & Astrophysics Postdoctoral Fellowship to carry out her own program of research and outreach in Chicago, currently sharing a joint appointment between the University of Chicago and Adler Planetarium.

