Kyle DeGrave, Ph.D.

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Education

Ph.D. Astronomy: New Mexico State University Astronomy Department, May 2015.
M.S. Astronomy: New Mexico State University Astronomy Department, 2012.
B.S. Physics: Michigan State University Physics Department, 2008.
Bay de Noc Community College, 2004 – 2005.

Research Focus and Interests

Data science and machine learning
Helioseismology
Supergranulation and sunspot flow structure

Employment

NorthWest Research Associates
Postdoctoral Research Scientist (Jun. 2015 – Present).

New Mexico State University, Astronomy Department
Research Assistant advised by Dr. Jason Jackiewicz (Aug. 2010 – May 2015).
Teaching Assistant, Introductory Astronomy, (Aug. 2009 – Aug. 2011, Aug. 2013 – May 2014).

Michigan State University, Physics Department
Teaching Assistant, Introductory Physics (Aug. 2007 – Aug. 2009).

Bay de Noc Community College
Tutor, Intermediate and College Algebra (Aug. 2004 – Aug. 2005).
Tutor, Introductory Physics (Aug. 2004 – Aug. 2005).

Publications

1. **Forward and Inverse Modeling of Helioseismic Holography Measurements of MHD Simulations of Convection and Sunspot Flows**. K. DeGrave, D. C. Braun, A. C. Birch, A. D. Crouch, B. Javornik. In prep.
2. **A Helioseismic Study of Supergranule Variation over Solar Cycle 24**. K. DeGrave, J. Jackiewicz. In prep.
3. **Helioseismic Investigation of Modeled and Observed Supergranule Structure**. K. DeGrave, J. Jackiewicz. *Solar Physics*, **290**, 1547 (2015).

4. **Time-Distance Inversions of Two Realistic Sunspot Simulations**. K. DeGrave, J. Jackiewicz, M. Rempel. *Astrophysical Journal*, **794**, 18 (2014).

5. **Validating Time-Distance Helioseismology with Realistic Quiet-Sun Simulations**. K. DeGrave, J. Jackiewicz, M. Rempel. *Astrophysical Journal*, **788**, 127 (2014).

6. **Example Inversion for a New Generalized Local Helioseismology Pipeline**. K. DeGrave and J. Jackiewicz. *Astronomische Nachrichten* (Astronomical Notes), **333**, 998 (2012).

Conference Proceedings

1. **Preliminary Time-Distance Inversion Tests of Realistic Quiet-Sun and Sunspot Simulation Data**. K. DeGrave and J. Jackiewicz. *Astronomical Society of the Pacific*, **478**, 251 (2013).

Conference Talks

1. **Forward and Inverse Modeling of Helioseismic Holography Measurements of MHD Simulations of Convection and Sunspot Flows**. *Solar Physics Division Meeting*. University of Colorado, Boulder, June 2016.

2. **A Helioseismic Study of Supergranule Variation Over Solar Cycle 24**. *Boulder Solar Day*. High Altitude Observatory, March 2016.

3. **Comparing an "Average" HMI Supergranule to the Duvall & Hanasoge (2012) Flow Model.** *Solar Subsurface Flows from Helioseismology: Problems and Prospects*, LWS Helioseismology Workshop #4. Stanford University, June 2014.

4. **Time-Distance Helioseismology of Two Realistic Sunspot Simulations**. *Solar Subsurface Flows from Helioseismology: Problems and Prospects*, LWS Helioseismology Workshop #4. Stanford University, June 2014.

5. **Time-Distance Helioseismology of Realistic Solar Simulations**. *Understanding the Dynamics of the Sun using Helioseismology and MHD Simulations*, LWS Workshop. NASA Ames Research Center, February 2012.

6. **Validation of Helioseismic Techniques Using Realistic Solar Simulations**. *New Mexico State University Graduate Research and Arts Symposium*, March 2010.

Conference Posters

1. **Validating Time-Distance Helioseismology Using Realistic Quiet-Sun Simulations**. K. DeGrave, J. Jackiewicz, M. Rempel, *224th Joint AAS Solar Physics Division Meeting*, Boston, MA, June 2014.

2. **Validating Time-Distance Helioseismology Using Realistic Quiet-Sun Simulations**. K. DeGrave, J. Jackiewicz, M. Rempel, *New Mexico State University Graduate Research and Arts Symposium*, Las Cruces, NM, March 2014.

3. **Validating Time-Distance Helioseismology With Quiet-Sun and Sunspot Simulations**. K. DeGrave, J. Jackiewicz, D. C. Braun, M. Rempel, NSO Workshop #27 *Fifty Years of Seismology of the Sun and Stars*, Tucson, AZ, May 2013.

4. **Probing the Three-Dimensional Structure of Solar Supergranulation Using Local Helioseismology**. K. DeGrave, J. Jackiewicz, D. C. Braun, ESF LFUI *The Modern Era of Helio- and Asteroseismology*, Obergurgl, Austria, May 2012.

5. **F-mode Seismology of Solar Simulations**. K. DeGrave, J. Jackiewicz, D. C. Braun, A. C. Birch. *221st Joint AAS Solar Physics Division Meeting*, Las Cruces, NM, June 2011.

Awards

2014 NMSU astronomy Zia Award for outstanding graduate student research
2014 Solar Physics Division poster competition honorable mention
2014 NMSU Three Minute Thesis award recipient
2014 Solar Physics Division studentship travel award
2011 – 2012: New Mexico Space Grant recipient
2010 – 2011: New Mexico Space Grant recipient
2006 Michigan State University NSF Research Experiences for Undergraduates

Summer Schools Attended

2011: UCAR Heliophysics Summer School. Boulder, CO.

Continued Professional Development

2014 Machine Learning – Stanford University (available through Coursera)
2014 The Data Scientist's Toolbox – Johns Hopkins University (available through Coursera)

Programming and Technical Info

Strong proficiency in Matlab/Octave (6+ years)
Working knowledge of Python
Introductory experience with C++
Introductory experience with SQL
Linux and OS X operating systems (5+ years)
Proficient with Keynote and Powerpoint
Proficient with Microsoft Office and Excel
Proficient with LaTex and Beamer