

AARON DOTTER

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Research Interests

Stellar evolution, particularly computational studies of low- to intermediate-mass stars.
Chemical abundance variations in stars and stellar evolution models.
Resolved stellar populations, with emphasis on the study globular cluster color-magnitude diagrams.
Galaxy formation and evolution, as informed by derived ages and metallicities of stellar populations.

Education

2001-2007 Dartmouth College Ph.D. Thesis: 'Self-consistent stellar evolution models . . .' [Link to ADS](#)
1996-2000 Carleton College B.A. in Physics & Astronomy with Honors

Appointments

2010- Space Telescope Science Institute Postdoctoral Scholar
2008-2010 University of Victoria CITA National Postdoctoral Fellow
2007-2008 Dartmouth College Research Associate

Publication Summary

35 publications in refereed journals with more than 1100 total citations; *h*-index: 16.

Academic Honors

2005-2006 Dartmouth College Gordon F. Hull Fellowship
2000 Carleton College Distinction in the Major

Recent Funding History

2011-2014 NASA Co-I \$400K, *New Leverage on Stellar Evolution: NASA Archives and Bayes*
2011 HST Co-PI \$120K, *AR-12642: The Nature and Origin of Multiple Populations in Magellanic . . .*
2008 HST Co-I \$400K, *GO-11677: Is 47 Tuc Young? Measuring its White Dwarf Cooling Age . . .*
2008 HST PI \$60K, *GO-11586: Exceptional Galactic Halo Globular Clusters and the 2nd Parameter*

Graduate and Postdoctoral Sponsors

Brian Chaboyer, Dartmouth College, Graduate Advisor; Don Vandenberg, University of Victoria, Postdoctoral Advisor; Jason Kalirai, STScI, Postdoctoral Advisor

Teaching, Service, and Outreach

Guest Lecturer in Astronomy Courses, 2008–2010

Department of Physics and Astronomy, University of Victoria

Lectures in Stellar Astrophysics, Stellar Populations, and Topics in Galactic Astronomy.

Teaching Assistant, 2001–2007

Department of Physics and Astronomy, Dartmouth College

Teaching Assistant for three courses in physics and astronomy and several terms' management of the department's weekly public observing sessions.

Scientific Ethics Instructor, 2003–2006

Arts and Sciences Graduate School, Dartmouth College

Three years experience as an instructor in an initiative to teach scientific ethics to graduate students in all scientific disciplines. Duties include preparing material for class and leading discussions.

Scientific Referee and Review Panelist, 2008–present

Served as a scientific referee for *The Astrophysical Journal*, *Astronomy & Astrophysics*, and *Monthly Notices of the Royal Astronomical Society* and as a review panelist for the NSF.

Astronomy Instructor, Summer 2006

Math Science Upward Bound, Vermont Technical College, Randolph Center, VT

Designed and taught an astronomy course as part of a six week summer program in math and science for highly motivated high school students. These students were chosen because they were the first in their families to attend college.

Invited Talks

6. "Insights into the formation of the Galaxy from globular clusters"
Dept. of Astronomy & Astrophysics, Penn State University, March 23, 2011
5. "What globular clusters can tell us about the formation of the Galactic halo"
Dept. of Physics & Astronomy, Wichita State University, November 2, 2010
4. "Metallicity Effects in Low Mass Stellar Evolution Models"
Cool Stars 16, Seattle, WA, August 30, 2010
3. "Globular Clusters in the Outer Galactic Halo"
Carnegie Observatory, Pasadena, CA, November 10, 2009
2. "Chemical Evolution and the Duration of Star Formation in Globular Clusters"
Dept. of Physics & Astronomy, University of British Columbia, February 2, 2009
1. "Chemical Evolution of Globular Clusters"
Herzberg Institute of Astrophysics, January 13, 2009

Refereed Publications

36. [The effects of differential reddening and stellar rotation on the appearance of multiple populations in star clusters: the case of Trumpler 20](#), I. Platais, C. Melo, S. Quinn, J. Clem, S. de Mink, **A. Dotter**, V. Kozhurina-Platais, D. Latham, & A. Bellini, 2012, *ApJL* in press
35. [The Spectral Energy Distributions of White Dwarfs in 47 Tucanae: The Distance to the Cluster](#), K. Woodley, R. Goldsbury, J. Kalirai, H. Richer, P.-E. Tremblay, J. Anderson, P. Bergeron, **A. Dotter**, & 8 co-authors, 2012, *AJ*, 143, 50
34. [A Deep, Wide-field, and Panchromatic View of 47 Tuc and the SMC with HST: Observations and Data Analysis Methods](#), J. Kalirai, H. Richer, J. Anderson, **A. Dotter**, & 9 co-authors, 2012, *AJ*, 143, 11
33. [The ACS Survey of Galactic Globular Clusters XI: The Three-Dimensional Orientation of the Sagittarius Dwarf Spheroidal Galaxy and its Globular Clusters](#), M. Siegel, S. Majewski, D. Law, A. Sarajedini, **A. Dotter**, & 11 co-authors, 2011, *ApJ*, 743, 20
32. [Detailed Chemical Abundances of Four Stars in the Unusual Globular Cluster, Palomar 1](#), C. Sakari, K. Venn, M. Irwin, W. Aoki, N. Arimoto, & **A. Dotter**, 2011, *ApJ*, 740, 106
31. [Accurate Low-Mass Stellar Models of KOI-126](#), G. Feiden, B. Chaboyer, & **A. Dotter**, 2011, *ApJL*, 740, 25
30. [Globular clusters in the outer Galactic halo: new HST/ACS imaging of 6 globular clusters and the Galactic globular cluster age-metallicity relation](#), **A. Dotter**, A. Sarajedini, & J. Anderson, 2011, *ApJ*, 738, 74
29. [PAndAS' Progeny: Extending the M31 Dwarf Galaxy Cabal](#), J. Richardson, M. Irwin, A. McConnachie, N. Martin, **A. Dotter**, & 6 co-authors, 2011, *ApJ*, 732, 76
28. [Density Variations in the NW Star Stream of M31](#), R. Carlberg, H. Richer, A. McConnachie, M. Irwin, R. Ibata, **A. Dotter**, & 7 co-authors, 2011, *ApJ*, 731, 124
27. [Modules for Experiments in Stellar Astrophysics \(MESA\)](#), B. Paxton, L. Bildsten, **A. Dotter**, F. Herwig, P. Lesaffre, & F. Timmes, 2011, *ApJS*, 192, 3
26. [The ACS Survey of Galactic Globular Clusters. X. New Determinations of Centers for 65 Clusters](#), R. Goldsbury, H. Richer, J. Anderson, **A. Dotter**, A. Sarajedini, & K. Woodley, 2010, *AJ*, 140, 1830
25. [The photometric properties of a vast stellar substructure in the outskirts of M33](#), A. McConnachie, A. Ferguson, M. Irwin, J. Dubinski, L. Widrow, **A. Dotter**, R. Ibata, & G. Lewis, 2010, *ApJ*, 723, 1038
24. [Mass transport by buoyant bubbles in galaxy clusters](#), E. Pope, A. Babul, G. Pavlovski, R. Bower, & **A. Dotter**, 2010, *MNRAS*, 406, 2023
23. [The ACS Survey of Galactic Globular Clusters. VIII. Effects of Environment on Globular Cluster Global Mass Functions](#), N. Paust, I. Reid, G. Piotto, A. Aparicio, J. Anderson, A. Sarajedini, L. Bedin, B. Chaboyer, **A. Dotter**, & 6 co-authors, 2010, *AJ*, 139, 476
22. [The Cluster Ages Experiment. IV. Analysis of the Eclipsing Binary V70 in the Globular Cluster 47 Tuc](#), I. B. Thompson, J. Kaluzny, S. M. Rucinski, W. Krzeminski, W. Pych, **A. Dotter**, & G. S. Burley, 2010, *AJ*, 139, 329
21. [The ACS Survey of Galactic Globular Clusters. IX. Horizontal Branch Morphology and the Second Parameter Phenomenon](#), **A. Dotter**, A. Sarajedini, & 15 co-authors, 2010, *ApJ*, 708, 698

20. [Evolutionary implications of the new triple- \$\alpha\$ reaction rate for low mass stars](#), **A. Dotter** & B. Paxton, 2010, *A&A*, 507, 1617
19. [Comparison of Alpha-Element-Enhanced Simple Stellar Population Models with Milky Way Globular Clusters](#), H.-C. Lee, G. Worthey, & **A. Dotter**, 2009, *AJ*, 138, 1442
18. [The remnants of galaxy formation from a panoramic survey of the region around M31](#), A. W. McConnachie, M. J. Irwin, R. A. Ibata, J. Dubinski, L. M. Widrow, N. F. Martin, P. Côté, **A. Dotter**, & 21 co-authors, 2009, *Nature*, 461, 66
17. [Deep 2MASS Photometry of M67 and Calibration of the Main-Sequence \$J - K_s\$ Color Difference as an Age Indicator](#), A. Sarajedini, **A. Dotter**, & A. Kirkpatrick, 2009, *ApJ*, 698, 1872
16. [The ACS Survey of Galactic Globular Clusters. VII. Relative Ages](#), A. Marín-Franch, A. Aparicio, G. Piotto, A. Rosenberg, B. Chaboyer, A. Sarajedini, M. Siegel, J. Anderson, L. R. Bedin, **A. Dotter**, & 6 co-authors, 2009, *ApJ*, 694, 1498
15. [Stellar Population Models and Individual Element Abundances. II. Stellar Spectra and Integrated Light Models](#), H.-C. Lee, G. Worthey, **A. Dotter**, & 7 co-authors, 2009, *ApJ*, 694, 902
14. [ACS Survey of Galactic Globular Clusters. VI. NGC 6366: A Heavily Stripped Galactic Globular Cluster](#), N. Paust, A. Aparicio, G. Piotto, I. Reid, J. Anderson, A. Sarajedini, L. Bedin, B. Chaboyer, **A. Dotter**, & 6 co-authors, 2009, *AJ*, 137, 246
13. [Horizontal-Branch Morphology and Mass Loss in Globular Clusters](#), **A. Dotter**, 2008, *ApJ*, 687L, 21
12. [Globular Clusters in the Outer Galactic Halo: AM-1 and Palomar 14](#), **A. Dotter**, A. Sarajedini, & S.-C. Yang, 2008, *AJ*, 136, 1407
11. [The Dartmouth Stellar Evolution Database](#), **A. Dotter**, B. Chaboyer, D. Jevremović, V. Kostov, E. Baron, & J. W. Ferguson, 2008, *ApJS*, 178, 89
10. [Deep Advanced Camera for Surveys Imaging in the Globular Cluster NGC 6397: the Cluster Color-Magnitude Diagram and Luminosity Function](#), H. B. Richer, **A. Dotter**, & 9 co-authors, 2008, *AJ*, 135, 2141
9. [Deep Advanced Camera for Surveys Imaging in the Globular Cluster NGC 6397: Dynamical Models](#), J. Hurley, M. Shara, H. Richer, I. King, S. Davis, J. Kalirai, B. Hansen, **A. Dotter**, J. Anderson, G. Fahlman, & M. Rich, 2008, *AJ*, 135, 2129
8. [The ACS Survey of Galactic Globular Clusters. III. The Double Subgiant Branch of NGC 1851](#), A. P. Milone, L. R. Bedin, G. Piotto, J. Anderson, I. R. King, A. Sarajedini, **A. Dotter**, & 9 co-authors, 2008, *ApJ*, 673, 241
7. [The White Dwarf Cooling Sequence of NGC 6397](#), B. M. S. Hansen, J. Anderson, J. Brewer, **A. Dotter**, & 9 co-authors, 2007, *ApJ*, 671, 380
6. [The ACS Survey of Galactic Globular Clusters: M54 and Young Populations in the Sagittarius Dwarf Spheroidal Galaxy](#), M. Siegel, **A. Dotter**, & 12 co-authors, *ApJ*, 667L, 57
5. [Stellar Population Models and Individual Element Abundances. I. Sensitivity of Stellar Evolution Models](#), **A. Dotter**, B. Chaboyer, J. W. Ferguson, H.-C. Lee, G. Worthey, D. Jevremović, & E. Baron, 2007, *ApJ*, 666, 403
4. [The ACS Survey of Galactic Globular Clusters. II. Stellar Evolution Tracks, Isochrones, Luminosity Functions, and Synthetic Horizontal-Branch Models](#), **A. Dotter**, B. Chaboyer, D. Jevremović, E. Baron, J. W. Ferguson, A. Sarajedini, & J. Anderson, 2007, *AJ*, 134, 376

3. [The ACS Survey of Galactic Globular Clusters. I. Overview and Clusters without Previous HST Photometry](#), A. Sarajedini, L. R. Bedin, B. Chaboyer, **A. Dotter**, & 9 co-authors, 2007, *AJ*, 133, 1658
2. [Stellar Pollution and \[Fe/H\] in the Hyades](#), **A. Dotter** & B. Chaboyer, 2003, *ApJ*, 596L, 101
1. [The Impact of Pollution on Stellar Evolution Models](#), **A. Dotter** & B. Chaboyer, 2003, *ApJ*, 596, 496