

# Aaron M. Geller

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## PROFESSIONAL PREPARATION

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### *Graduate University*

University of Wisconsin - Madison (UW) : 2004 - present  
Degree : MS in Astronomy, Minor in Physics (2006)  
PhD in Astronomy (expected May 2010)

### *Undergraduate University*

University of Iowa - Iowa City (UI) : 2000 - 2004  
Degrees : BS in Astronomy, Physics, & Mathematics, Minor in Studio Art (2004)  
Special Honors : Graduated with Distinction, Honors in Physics, Honors in Astronomy

## RESEARCH EXPERIENCE

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### *UW Astronomy Department* : 2004 - present

Research Assistant

Advisor : Dr. Robert D. Mathieu

Research : Using open cluster observations to guide sophisticated  $N$ -body simulations of star clusters in order to study the evolution of a binary population and the origins of anomalous stars, like blue stragglers and sub-subgiants.

Thesis : "An In-Depth Dynamical Study of the Old Open Cluster NGC 188"

### *Swinburne University of Technology, Hawthorn, Victoria, Australia* : Summer 2009 NSF EAPSI Fellow

Advisor : Dr. Jarrod R. Hurley

Research : Created an  $N$ -body simulation of NGC 188 (7 Gyr), the first such simulation whose primordial binary population is directly defined by observations of a young open cluster (M35; 150 Myr).

Funded by the National Science Foundation (NSF) & the Australian Academy of Sciences through the East Asia and Pacific Summer Institutes (EAPSI) fellowship.

### *National Radio Astronomy Observatory, Green Bank, West Virginia* : Summer 2003

Research Experience for Undergraduates (REU)

Advisor : Dr. Anthony H. Minter

Research : Modeled the Galactic magnetic field through detailed computer simulations guided by rotation measures and data from the Wisconsin H-alpha Mapper (WHAM).

### *UI Physics & Astronomy Department* : 2002 - 2004

Undergraduate Grant Supported Researcher

Advisor : Dr. Steven R. Spangler

Research : Took radio observations of the Solar wind and corona, and modeled the response function of VLA antennas when observing near the Sun.

Thesis : "The Brightness Temperature of a VLA Antennae During Near-Solar Observations"

## TEACHING & MENTORING EXPERIENCE

- Spring 2009 Teaching Assistant for UW Astronomy 113 : Hands on the Universe - Astronomy Lab
- Led four lab sections per week, proctored exams, administered grades
- 2008 - 2009 Graduate student mentor for UW first and second year PhD student (Natalie Gosnell)
- 2007 - 2009 Co-advisor for undergraduate thesis work of
- Mike DiPompeo
    - “Exploring Dynamical Formation Scenarios for an Interesting Binary in NGC 6819”
    - graduated from UW with astronomy major in 2007
    - currently a Ph.D. student at the University of Wyoming
  - Matthew Bailey
    - “Investigating Blue Straggler Production Through Binary Star Evolution”
    - graduated from Berea College with physics major in 2009
- 2006 - 2009 Mentored undergraduate astronomy majors at UW : Mike DiPompeo, Thomas Finzell
- 2005 - 2008 Co-mentored REU students during four summers at the UW
- 2008 : Matthew Bailey - <http://www.astro.wisc.edu/~bailey/index.html>
  - 2007 : Natalie Gosnell - <http://www.astro.wisc.edu/~gosnell/reu.html>
  - 2006 : Meagan Morscher - <http://www.astro.wisc.edu/~morscher/index.html>
  - 2005 : Sylvana Yelda - <http://www.astro.wisc.edu/~yelda/index.htm>
- Fall 2004 Teaching Assistant for UW Astronomy 103 : Exploration of the Solar System
- Led six discussion sections per week, held exam review sessions, proctored exams

## OBSERVING EXPERIENCE

### *Approved Observing Programs as Primary Investigator*

“A Study of Anomalous Stars & Binary Populations within Open Clusters:  
Tests of Theoretical Models”

- Granted by the NOAO and UW - Madison to observe on the WIYN-3.5m/Hydra (NOAO: 2007B-2010A, 46 nights total ; UW 2007B-2009B; 24 nights total)
- NOAO long-term status in Jan. 2009 (three semesters of guaranteed observing time)
- Multi-object optical spectroscopy of stars in multiple open clusters

### *Approved Observing Programs as Co-Investigator*

“The Formation and Evolution of Blue Stragglers in Open Clusters”; PI: R. Mathieu

- Granted by the NOAO to observe on the MMT-6.5m/Hectochelle (2009B; 2.5 nights)
- Granted by the UW - Madison to observe on the WIYN-3.5m/Hydra (2009B; 3 nights)
- Multi-object optical stellar spectroscopy of blue stragglers in open clusters

“The Connections Between Binarity, Circumstellar Disks, and Stellar Rotation”; PI: S. Meibom

- Granted by the NOAO to observe on the WIYN-3.5m/Hydra (2009B; 2 nights)
- Multi-object optical stellar spectroscopy of the stars in the open cluster M37

“An XMM-Newton Survey of Rich Open Clusters”; PI: D. Pooley

- Granted by the European Space Agency (ESA) to observe on XMM-Newton (2007; 275 ks)
- X-ray imaging and spectroscopy of multiple open clusters

“WIYN Open Cluster Study (WOCS): Infrared Cluster Characteristics”; PI: P. Frinchaboy

- Granted by the NOAO to observe on the KPNO-4m/NEWFIRM (2007B; 2 nights)
- Infrared CCD imaging and photometry of multiple open clusters

“The WIYN Open Cluster Study: New Astrophysics from Old Open Clusters”; PI: R. Mathieu

- Granted by the NOAO to observe on the MMT-6.5m/Hectochelle (2006A; 2 nights)
- Multi-object optical stellar spectroscopy of multiple open clusters

## SERVICE & COMMUNITY OUTREACH

- 2009 - present WIYN Remote Observing Consultant, UW - Madison : assist remote observers
- 2009 Co-creator of the UW International Year of Astronomy (IYA) website :  
<http://www.astro.wisc.edu/trouille/IYA09/Welcome.php>
- 2009 Aided in designing and presenting IYA From Earth to the Universe exhibit
- 2009 Public lecture at the UW Space Place : <http://www.spaceplace.wisc.edu/#guest>
- 2008 Co-hosted the PEOPLE "Party with the Stars" at the UW Space Place : astronomy presentation and telescope viewing led by UW minority undergraduates from the PEOPLE program ; <http://www.peopleprogram.wisc.edu/>
- 2006 - 2009 Updated and maintained UW Graduate Program website :  
<http://www.astro.wisc.edu/gradprogram/>
- 2006 - 2009 Member of the UW Astronomy Department website planning committee
- 2006 - 2009 Presentations at WIYN board and UW Astronomy Board of Visitors meetings : to aid in publicizing the astronomy research performed by graduate students at UW
- 2004 - 2009 Universe in the Park (UitP) : led summer public telescope viewings and lectures in Wisconsin state parks ; <http://www.astro.wisc.edu/uitp/>
- 2004 - 2009 Led Washburn Observatory public star parties :  
<http://www.astro.wisc.edu/Washburn/>

## GRANTS & AWARDS

- 2009 NSF East Asia and Pacific Summer Institutes (EAPSI) Fellowship (\$11,000) : joint funding from NSF and Australian Academy of Sciences for research at the Swinburne University of Technology in Australia during summer of 2009
- 2009 IAU Travel Grant (\$500) : to fund travel to the IAU XXVII (and IAUS 266)
- 2009 AAS International Travel Grant (ITG; \$1,150) : to fund travel to the IAU XXVII (and IAUS 266)
- 2008 - 2009 Wisconsin Space Grant (\$5,000) : funded by NASA for research in astronomy
- 2008 - 2009 UW Vilas Travel Grant (\$600) : to fund research related travel for graduate students
- 2006 - 2007 Wisconsin Space Grant (\$2,000) : funded by NASA for research in astronomy
- 2004 Waldo Edward and Martha Althaus Smith Award (\$1,000) : to top UI graduating senior for outstanding research in astronomy
- 2004 John Goodricke Award : for excellent undergraduate scholarship and astronomy research
- 2000 - 2004 UI Presidential Scholarship (\$28,000) : awarded to top-ranked 50 incoming students

## PUBLICATIONS

### *Refereed Publications*

- "A Binary Star Fraction of 76 per cent and Unusual Orbit Parameters for the Blue Stragglers of NGC 188", Mathieu, R. D. & **Geller, A. M.** 2009, *Nature*, 462, 1032
- "WIYN Open Cluster Study. XXXIX. The Binary Population of NGC 188", **Geller, A. M.** & Mathieu, R. D. 2009, *AJ* *submitted*
- "WIYN Open Cluster Study. XXXVIII. Stellar Radial Velocities in the Young Open Cluster M35 (NGC 2168)", **Geller, A. M.**, Mathieu, R. D., Braden, E. K., Meibom, S., Platais, J. & Dolan, C. J. 2009, *AJ*, *submitted*

- “WIYN Open Cluster Study. XXIV. Stellar Radial-Velocity Measurements in NGC 6819”, Hole, K. T., **Geller, A. M.**, Mathieu, R. D., Meibom, S., Latham, D. W. & Platais, I. 2009, AJ, 138, 159
- “WIYN Open Cluster Study. XXXVI. Spectroscopic Binary Orbits in NGC 188”, **Geller, A. M.**, Mathieu, R. D., Harris, H. C. & McClure, R. D. 2009, AJ, 137, 3743
- “WIYN Open Cluster Study. XXXII. Stellar Radial Velocities in the Old Open Cluster NGC 188”, **Geller, A. M.**, Mathieu, R. D., Harris, H. C. & McClure, R. D. 2008, AJ, 135, 2264
- “Surprising Dissimilarities in a Newly Formed Pair of ‘Identical Twin’ Stars”, Stassun, K. G., Mathieu, R. D., Cargile, P. A., Aarnio, A. N., Stempels, E. & **Geller, A. M.** 2008, Nature, 453, 1079

### *Conference Proceedings & Abstracts*

- “The Progeny of Stellar Dynamics and Stellar Evolution within an  $N$ -body Simulation of NGC 188”, **Geller, A. M.**, Hurley, J. R. & Mathieu, R. D. 2009, in Proceedings of IAU Symposium 266, *in press*
- “X-ray Sources of the Rich Open Cluster NGC 6819” Gosnell, N., Frinchaboy, P., **Geller, A. M.**, Kalirai, J., Mathieu, R. D., Pooley, D & Ramirez-Ruiz, E. 2009, in “Chandra’s First Decade of Discovery”, Cambridge, MA, USA
- “Dynamics of the Open Cluster NGC 188: A Comparison to an  $N$ -body Simulation of M67”, **Geller, A. M.**, Mathieu, R. D., Harris, H. C. & McClure, R. D. 2008, in Proceedings of IAU Symposium 246 (Vesperini, Gierz & Sills, eds.), 111
- “Dynamics of the Open Cluster NGC 188: A Comparison to an  $N$ -body Simulation of M67”, **Geller, A. M.**, Mathieu, R. D., Harris, H. C. & McClure, R. D. 2007, BAAS, 211, 5812
- “Investigating Dynamical Formation Scenarios for an Interesting Binary in Open Cluster NGC 6819”, Gosnell, N. M., DiPompeo, M. A., Braden, E. K., **Geller, A. M.** & Mathieu, R. D., 2007, BAAS, 211, 5834

### *Selected Papers in Preparation*

- “A Direct  $N$ -body Model of the Old Open Cluster NGC 188”, **Geller, A. M.**, Mathieu, R. D. & Hurley, J. R. 2009, ApJ
- “WIYN Open Cluster Study. XXXXI. Spectroscopic Binary Orbits in M35”, **Geller, A. M.**, Mathieu, R. D., Meibom, S. & Finzell, T. 2009, AJ
- “WIYN Open Cluster Study. XXXXII. The Binary Population of M35”, **Geller, A. M.**, Mathieu, R. D., Meibom, S. & Finzell, T. 2009, AJ

### *Contributed Talks*

- “The Progeny of Stellar Dynamics and Stellar Evolution within an  $N$ -body model of NGC 188” at the International Astronomical Union Symposium 266, Rio de Janeiro, Brazil, *Star Clusters: Basic Galactic Building Blocks Throughout Time and Space*, August 2009 (20 minutes)
- “The Progeny of Stellar Dynamics and Stellar Evolution” at the Kavli Institute for Theoretical Physics, Santa Barbara, CA, *Formation and Evolution of Globular Clusters Conference*, April 2009 (60 minutes) : <http://online.itp.ucsb.edu/online/clusters09/geller/>