

Phil Arras

Work Address: Astronomy Department, University of Virginia
P.O. Box 400325, Charlottesville, VA 22904
Telephone: (434) 924-4888
Fax: (434) 924-3104
E-mail: arras@virginia.edu

Education and Employment

2006- Assistant Professor, University of Virginia Astronomy Department
2005-2006 Postdoc, Kavli Institute for Theoretical Physics
2002-2005 NSF Astronomy and Astrophysics Postdoctoral Fellow
1999-2002 Postdoc, Canadian Institute for Theoretical Astrophysics
1999 Ph.D. in Physics, Cornell University
1993 B.Sc. in Physics, B.A. in Mathematics, UCSD

Refereed Publications

- “Thermal Tides in Short Period Exoplanets”, P. Arras & A. Socrates, *ApJ*, submitted.
- “Massive Satellites of Close-In Gas Giant Exoplanets”, T. Cassidy, R. Mendez, P. Arras, R. Johnson & M. Skrutskie, submitted to *ApJ*.
- “Ellipsoidal Oscillations Induced by Substellar Companions: A Prospect for the Kepler Mission”, E. Pfahl, P. Arras & B. Paxton, *ApJ*, accepted.
- “Non-dissipative tidal synchronization in accreting binary white dwarf systems”, E. Racine, E.S. Phinney & P. Arras, *MNRAS*, 380, 381 (2007).
- “Thermal Structure and Radius Evolution of Irradiated Gas Giant Planets,” P. Arras and L. Bildsten, *ApJ*, 650, 394 (2006).
- “Oscillation Modes of Relativistic Slender Tori”, O. Blaes, P. Arras & C. Fragile, *MNRAS*, 369, 1235 (2006).
- “Quasi-periodic Oscillations from Magnetorotational Turbulence”, P. Arras, O. Blaes & N. Turner, *ApJL*, 645, 65L (2006).
- “Pulsational Instabilities in Accreting White Dwarfs”, P. Arras, D. Townsley & L. Bildsten, *ApJL* 643, L119 (2006).
- “Radiation from Condensed Surface of Magnetic Neutron Stars,” M. van Adelsberg, D. Lai, A. Y. Potekhin & P. Arras, *ApJ*, 628, 902 (2005).
- “White Dwarf Heating and Subsequent Cooling in Dwarf Nova Outbursts,” A.L. Piro, P. Arras & L. Bildsten, *ApJ*, 628, 401 (2005).

“Hydrogen Burning on Magnetar Surfaces,” P. Chang, P. Arras, & L. Bildsten, *ApJL*, 616, L147 (2004) .

“Magnetars: Time Evolution, Superfluid Properties, and Mechanism of Magnetic Field Decay,” P. Arras, A. Cumming & C. Thompson, *ApJL*, 608, 49 (2004).

“Magnetic Field Evolution in Neutron Star Crusts Due to the Hall Effect and Ohmic Decay,” A. Cumming, P. Arras & E. Zweibel, *ApJ*, 609, 999 (2004).

“Seismology of the Accreting White Dwarf in GW Librae,” D. Townsley, P. Arras, & L. Bildsten, *ApJL*, 608, 105, (2004).

“A Free, Fast, Simple and Efficient TVD MHD Code,” Ue-Li Pen, Phil Arras, & ShingKwong Wong, *ApJS*, 149, 447, (2003).

“Saturation of the r-Mode Instability,” P. Arras, E.E. Flanagan, S.M. Morsink, A.K. Schenk, S.A. Teukolsky, & I. Wasserman, *ApJ*, 591 1129A (2003).

“Nonlinear mode coupling in rotating stars and the r-mode instability in neutron stars,” A.K. Schenk, P. Arras, E.E. Flanagan, S.A. Teukolsky, & I. Wasserman, *Phys. Rev. D.*, v65, Issue 2, b4001 (2002).

“Stellar Pollution in the Solar Neighborhood,” N. Murray, B. Chaboyer, P. Arras, B. Hansen, & R.W. Noyes, *ApJ*, 555, 801 (2001).

“R-Modes in Neutron Stars with Crusts: Turbulent Saturation, Spin-down, and Crust Melting,” Y. Wu, C.D. Matzner, & P. Arras, *ApJ*, 549, 1011 (2001).

“Constraints on the mass and abundance of black holes in the Galactic halo: the high-mass limit,” C. Murali, P. Arras, & I. Wasserman, *MNRAS*, 313, 87 (2000).

“Neutrino-nucleon interactions in magnetized neutron-star matter: The effects of parity violation,” P. Arras, & D. Lai, *Phys. Rev. D.*, v60, Issue 4, d3001 (1999).

“Can Parity Violation in Neutrino Transport Lead to Pulsar Kicks?,” P. Arras, & D. Lai, *ApJ*, 519, 745 (1999).

“Canaries in a coal mine: using globular clusters to place limits on massive black holes in the Galactic halo,” P. Arras, & Wasserman, *MNRAS*, 306, 257 (1999).

Thesis

“An environmental impact study: Using globular clusters to place limits on dark matter in the galactic halo”, P. Arras, *Ph.D. Thesis*, Cornell University (2000). Thesis advisor: Ira Wasserman.

Honors and Awards

Alfred P. Sloan Fellow (2008).

Fund for Excellence in Science and Technology Distinguished Young Investigator grant from UVa (2008).

NSF Astronomy and Astrophysics Postdoctoral Fellowship (2002-2005).

Jeffrey L. Bishop Award for research in dynamics at CITA (1999).

Sheng Keng Ma Award at UCSD from the Physics Department (1993).

Grants

NASA ATP grant “Nonlinear damping of tides in stars, planets and compact objects”, with Nevin Weinberg and Eliot Quataert.

Teaching Experience

Undergraduate/graduate class on Astrophysical Processes, Spring 2009.

Undergraduate/graduate class on Planetary Science, Spring 2008.

Graduate course on topical research in Astronomy, Fall 2007.

Graduate course on the Interstellar Medium, Spring 2007, co-taught 2009.

Introductory Astronomy for Majors, Fall 2006, 2008.

Co-taught Undergraduate Class “the Physics of California” at UCSB, Spring 2006.

Co-taught Undergraduate Class “the Physics of California” at UCSB, Spring 2005.

Co-taught Graduate Class on Extragalactic Astrophysics at UCSB, Fall 2002.

Teaching Assistant in Cornell Astronomy Department, Introductory Astronomy, Introductory Planetary Science. 1998-1999.

Grader in Cornell Astronomy Department. Graduate Class in Galactic Dynamics and Compact Stars. 1996-1998.

Teaching Assistant in Cornell Physics Department. Engineering Physics Sequence: Classical Mechanics, Electromagnetism, Waves and Optics, Thermodynamics. Honors Physics Sequence: Electromagnetism, Waves and Optics, Special Relativity. 1993-1995, 1997-1999.

Teaching Assistant in UCSD Physics Department. Engineering Physics Sequence: Mathematics, Electromagnetism. Mathematics Tutor for Mesa Engineering Program at UCSD. 1992-1993.

Invited Talks and Conference Proceedings

“Nonlinear saturation of the r-mode instability,” *ITP Conference* on “Spin and Magnetism in Young Neutron Stars”, talk is online at <http://online.itp.ucsb.edu/online/neustar00/arras/> (2000).

“Gravitational Waves from Oscillation Modes in Neutron Stars,” *ITP Conference* on “Gravitational Interaction of Compact Objects”, talk is online at http://online.itp.ucsb.edu/online/gravity_c03/arras/ (2003).

“Magnetic Field Evolution in Neutron Stars,” at *Physics and Astrophysics of Neutron Stars* at Sante Fe (2003).

“Gravitational Waves and the Spin Period of Neutron Stars,” colloquium at Montana State (2003).

“Seismology of Accreting White Dwarfs”, colloquium at MIT (2004).

“Gravitational Waves Limiting the Spin Period of Accreting Neutron Stars,” 2004 Aspen Winter Conference on Binary Radio Pulsars, ASP Conference Proceedings, ed. F. Rasio & I. Stairs (2004).

“Tides in Gas Giant Planets”, at KITP Planet formation workshop. Online at <http://online.kitp.ucsb.edu/online/> (2004).

“Seismology of Accreting White Dwarfs”, colloquium at MIT (2004).

“Seismology of Accreting White Dwarfs”, The astrophysics of cataclysmic variables and related objects, ASP Conf. Ser., eds. J.M. Hameury and J.P. Lasota. (astro-ph/0410313)

“Seismology of Accreting White Dwarfs”, colloquium at U. of Michigan (2005).

“Seismology of Accreting White Dwarfs”, colloquium at Berkeley (2005).

“Seismology of Accreting White Dwarfs”, colloquium at Stonybrook (2005).

“Seismology of Accreting White Dwarfs”, colloquium at Chicago (2005).

“Seismology of Accreting White Dwarfs”, and “Tides in Gas Giant Planets”, colloquia at Arizona State(2005).

“Seismology of Accreting White Dwarfs”, and “Cooling and Tides in Extrasolar Planets”, colloquia at U. of Florida (2005).

“Thermal Evolution and Tides in Extrasolar Gas Giant Planets”, KIPAC (2005).

“Instability Strip for Accreting White Dwarfs in CV’s”, Conference on Pulsating White Dwarfs in Cataclysmic Variables at KITP (2006).

“Thermal Evolution and Tides in Extrasolar Gas Giant Planets”, Princeton (2006).

“Thermal Evolution and Tides in Extrasolar Gas Giant Planets”, Ohio University (2006).

“Thermal Evolution and Tides in Extrasolar Gas Giant Planets”, Ohio University (2006).

“Thermal Evolution and Tides in Extrasolar Gas Giant Planets”, University of Virginia (2006).

“Thermal Evolution and Tides in Extrasolar Gas Giant Planets”, Michigan State (2006).

“Thermal Evolution and Tides in Extrasolar Gas Giant Planets”, Cornell (2007).

“Thermal Tides in Short-Period Exoplanets” presented at Solar-Extrasolar Meeting at NASA Ames (2009).