Aren N. Heinze

Visiting Professor
Department of Physics and Astronomy
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Education:

Ph.D. in Astronomy, 2007, University of Arizona – Tucson
B.S. in Astronomy, 2001, California Institute of Technology, Pasadena

Research Experience:

2007-present: Visiting Professor, Swarthmore College: Continuing work on the search for extrasolar planets using Adaptive Optics (AO) imaging, in collaboration with Phil Hinz and others at the University of Arizona; Precise photometric analysis of Kuiper Belt dwarf planet Makemake.

2001-2006: Graduate researcher with Phil M. Hinz, University of Arizona: Simulations in support of AO coronagraph design; Spectral analysis of transiting planet candidates; AO imaging survey of 50 nearby stars for extrasolar planets using the MMT.

Summer 1999: Summer Undergraduate Research Fellow (SURF) with Bonnie J. Buratti, JPL/Caltech: Photometric observations and analysis of Pluto to search for evidence of volatile transport or atmospheric freeze-out.

Teaching Experience:

2007-present: Visiting Professor, Swarthmore College: Organized and taught the very popular course Astro 1: Introductory Astronomy for non-majors. Organized and taught Astro 16: Modern Astrophysics for majors. Oversaw and graded a variety of astronomy and physics lab sections.

2005-2006: Graduate Teaching Assistant, University of Arizona: Held office hours, led review sessions, guest-lectured, and graded for ASTR 203: Astronomy of Stars – won teaching award detailed below. Graded for NATS 102: Beyond the Earth in Space and

Time, a very large introductory astronomy course for non-majors.

Awards and Fellowships:

2006: University of Arizona, Astronomy Department Outstanding Graduate Teaching Assistant Award

1999: Caltech/JPL SURF (Summer Undergraduate Research Fellowship)

Outreach and Astronomy Education:

2007: Provided an astronomy night to students from Wallingford Elementary School using the telescopes of Swarthmore College.

2007: Spoke on Astronomy and Religion at Proclamation Presbyterian Church in Bryn Mawr, PA.

1995-2007: Organized frequent stargazing trips for friends and acquaintances using my increasingly powerful personal telescopes. I always combine impressive telescopic views of astronomical objects with basic explanations of their nature and characteristics.

Peer Reviewed Publications:

Heinze, A. N.; Hinz, Philip M. et al. "**An L' and M band Adaptive Optics Imaging Survey for Planets Around 50 Nearby, Young Stars: Final Results**," in preparation.

Heinze, A. N.; deLahunta, Daniel. "**The Rotation Period and Lightcurve Amplitude of Kuiper Belt Dwarf Planet 136472 Makemake**," in preparation.

Heinze, A. N.; Hinz, Philip M.; Kenworthy, Matthew; Miller, Douglas; Sivanandam, Suresh 2008. "**Deep L' and M-band Imaging for Planets Around Vega and epsilon Eridani**," *Astrophysical Journal*, 688, 583.

Kenworthy, Matthew A.; Codona, Johanan L.; Hinz, Philip M.; Angel, J. Roger P.; **Heinze, Ari**; Sivanandam, Suresh 2007. "**First On-Sky High-Contrast Imaging with an Apodizing Phase Plate**," *Astrophysical Journal*, 660,762.

Hinz, Philip M.; **Heinze, A. N.**; Sivanandam, Suresh; Miller, Douglas L.; Kenworthy, Matthew A.; Brusa, Guido; Freed, Melanie; Angel, J. R. P. 2006. "**Thermal Infrared Constraint to a Planetary Companion of Vega with the MMT Adaptive Optics System**," *Astrophysical Journal*, 653, 1486.

Heinze, A. N.; Hinz, Philip M. 2005. "**Spectral Types for Four OGLE-III Transit Candidates: Could These Be Planets?**" *Astronomical Journal*, 130, 1929.

Buratti, B. J.; Hillier, J. K.; **Heinze, A.**; Hicks, M. D.; Tryka, K. A.; Mosher, J. A.; Ward, J.; Garske, M.; Young, J.; Atienza-Rosel, J. 2003. "**Photometry of pluto in the last decade and before: evidence for volatile transport?**" *Icarus*, 162,171.

Ph.D. Dissertation: University of Arizona, 2007. Advisor: **Dr. Phil Hinz.** "Planets Around Solar-Type Stars: Methods for Detection and Constraints on their Distribution from an L' and M band Adaptive Optics Imaging Survey."

Selected Conference Presentations:

Heinze, Aren; Hinz, P.; Sivanandam, S.; Kenworthy, M. "**How to Image Epsilon Eridani b**," *St. Louis, MO, June 2008: American Astronomical Society 212th meeting* (2008 AAS…212.4403).

Heinze, A.; Vilas, F.; Hinz, P.; Kenworthy, M. "**MMT Adaptive Optics Images of Vesta in L' and M' During the 2007 Apparition**," *Baltimore, MD, July 2008: Asteroids, Comets, and Meteors conference* (2008LPICo1405.8286).

Heinze, Aren; Hinz, P.; Sivanandam, S.; Meyer, M. "**An L' and M-band AO Imaging Survey for Extrasolar Giant Planets: Progress and Preliminary Results**," *Seattle, WA, January 2007: American Astronomical Society 209th meeting* (2006AAS...20922603).

Heinze, Ari; Hinz, Phil; Sivanandam, Suresh; Apai, Daniel; Meyer, Michael. "**High contrast L' band adaptive optics imaging to detect extrasolar planets**," *Orlando, FL, May 2006: SPIE Astronomical Telescopes Symposium* (2006SPIE.6272E.121H).

Sivanandam, Suresh; Hinz, Phil M.; **Heinze, Ari N.**; Freed, Melanie; Breuninger, Andrew H. "**Clio: a 3-5 micron AO planet-finding camera**," *Orlando, FL, May 2006: SPIE Astronomical Telescopes Symposium* (2006SPIE.6269E..27S).

Heinze, Aren N.; Hinz, Philip M.; McCarthy, Donald W., Jr. "**A 3-5 Micron Camera for Extrasolar Planet Searches**," *Waikoloa, HI, August 2002, SPIE Astronomical Telescopes and Instrumentation Symposium* (2003SPIE.4839.1154H).

Other Achievements and Endeavors:

2004: Built a rich-field binocular telescope consisting of two 8-inch F/5 Newtonian reflectors on a mount that carries the observer on a seat between the telescopes, allowing an unusually comfortable, starship-like observing experience.

2002: Planned and executed a 4-day backpacking trip up Mauna Loa, which included the remarkable experience of traversing cooled lava floes from relatively recent (1980's) eruptions – harsh landscapes of rock younger than myself.

1999-2005: Wrote a long fantasy novel, which I am currently seeking to publish.