

LUIS C. VARGAS

DEPARTMENT OF ASTRONOMY, YALE UNIVERSITY
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EDUCATION

Yale University
PhD. in Astronomy (in progress)

University of Kansas
B.S., May 2008, Physics, Astronomy (with departmental honors)
University Honors Program, University Distinction

SELECTED AWARDS

- 2008** Stranathan Award, Dept. of Physics and Astronomy, University of Kansas
 - 2007** Freeman-ASIA Study Abroad Fellowship
 - 2006** Barry Goldwater Scholarship
 - 2006** Phi Beta Kappa
 - 2005** American Physical Society Minority Scholar
 - 2003** National Hispanic Scholar
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RESEARCH EXPERIENCE

Search for ultra-faint dwarf satellite galaxies in SDSS-III (Autumn 2009-present)

Supervisor: Prof. Marla Geha (Yale University)

- Modified a filtering algorithm to search for undiscovered ultra-faint dwarf galaxies in the SDSS3 footprint.
- Calibrated the search algorithm using previously detected satellite galaxies.
- Plan to follow-up potential candidates with high-resolution spectroscopy to confirm any discovery.
- Expect to study the dynamics, metallicities, and structure of discovered ultra-faint dwarf galaxies.

Sub-millimeter imaging of a protostellar source in CS 7—6 (Summer 2008)

Supervisors: Dr. Shigehisa Takakuwa, Dr. Naomi Hirano, Dr. Nagayoshi Ohashi (Academia Sinica Institute for Astronomy and Astrophysics, Taipei, Taiwan)

- Calibrated and produced continuum and CS 7—6 integrated images and velocity maps of IRAS 16293-2422.

Multi-wavelength study of a small galactic plane region (Summer 2006)

Supervisor: Prof. Robert Benjamin (University of Wisconsin – Whitewater)

- Responsible for reduction of WIYN 3.5-m optical photometry.

- Generated cross-matched lists of sources found in IR (2MASS+IRAC), optical (WIYN 3.5 m), and X-rays (Chandra).
- Preliminarily identified YSOs based on multi-wavelength flux fits to theoretical spectra.
- Found three X-ray sources consistent with a YSO spectrum.

Metallicity effects on the $uvbyH\beta$ system (2005-2006)

Supervisors: Bruce Twarog and Barbara Anthony-Twarog (University of Kansas)

- Responsible for observations of field stars made in order to double the size of metal-rich $uvbyH\beta$ G and K dwarf photometric sample using 24-inch and 40-inch telescopes at Mount Laguna Observatory.
- Simulated the effect of varying stellar metallicity on the $uvbyH\beta$ system by computing theoretical colors and indices based on MARCS and PHOENIX spectral libraries.

Biological effects of gamma-ray bursts in the Ordovician extinction (2004)

Supervisors: Adrian Melott and Bruce Lieberman (University of Kansas)

- Compared statistically the impact of the Ordovician extinction on shallow versus deep water organisms, as a possible means to test the hypothesis that UV radiation, enhanced by the destruction of the ozone layer by gamma rays from a GRB, played a role in the extinction.

TEACHING EXPERIENCE

- **Teaching Fellow**, "Introduction to Cosmology", Spring 2009
- **Teaching Fellow**, "Introduction to Astronomical Observing", Autumn 2009
- **Adjunct Instructor**, GED Math, Wichita Area Technical College, 10/2008-05/2009
- **Teaching Assistant**, Undergraduate Astronomy Lab, University of Kansas, Spring 2008
- **Physics Tutor**, University of Kansas, Spring 2007, Spring 2008

COMPUTER EXPERIENCE

- **Programming Languages:** FORTRAN 77/90, C++, IDL, basic shell scripting
- **Astronomical Software:** IRAF, MIR, MIRIAD

OBSERVING EXPERIENCE

- 40" telescope, Mount Laguna Observatory (CCD Imager)
- 24" Smith telescope, Mount Laguna Observatory (Photoelectric photometer)

PUBLICATIONS

B. A. Twarog, L. C. Vargas, B. J. Anthony-Twarog, *The $uvbyH\beta$ Metallicity Calibration for G and K Dwarfs*, *Astronomical Journal* 134, 1777 (2007)

POSTERS

L. C. Vargas, M. Geha, N. Padmanabhan, S. R. Majewski, *Search for Ultra-Faint Dwarf Galaxies in SDSS3 BOSS Imaging*, AAS 215 (2010)

B. A. Twarog, B. J. Anthony-Twarog, J. A. Feldt, K. A. Liebster, L. Mayer, **L. C. Vargas**, *Probing the Metal-Rich Stellar Population in the Solar Neighborhood*, AAS 211 (2008)

L. C. Vargas, R. Benjamin, *A Comparison of Spitzer, WIYN 0.9m, and Chandra Point Source Populations in the Inner Galaxy*, AAS 209 (2007)

FOREIGN LANGUAGES

Spanish (native), English (native-level), Japanese (business-level)