

Hector S. Valdez

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Education:

December, 2005 – graduated early from Centennial High School, Champaign, MN

August, 2011 (expected) – B.S., Brigham Young University

Major: Physics

Minor: Mathematics

GPA: Overall: 3.66/4.0

Major: 3.62/4.0

Awards:

SULI Grant: Employed at Los Alamos National Laboratory with a theoretical physicist, Dr. Eric Hovenweep

Research experience:

September 2009 – April 2011 – Research Assistant, **Brigham Young University**

Principle Investigator: Dr. Kerry Young

Goal: Create an unobserved ordering of Pt-Cd

Activities:

- Rebuilt and cleaned vacuum system with both turbo & cryogenic pumps for magnetic sputtering
- Made over 20 samples using magnetic sputtering
- Experience with ellipsometry
- Experience in scanning electron microscopy (SEM)
- Experience using EDAX for elemental analysis
- Exposure to scanning tunneling electron microscopy (STEM)
- Exposure to x-ray diffraction (XRD)

May – August 2010 – Research Assistant, **Los Alamos National Laboratory (LANL)**

Principle Investigator: Dr. Eric Hovenweep

Goal: Continue a survey simulating the photoevaporation of cosmological minihalos by the first stars at various distances of proximity

Activities:

- Managed & post-processed over 60 astrophysical simulations on large cluster computers surveying early star formation
- Exposure to ZEUS-MP
- Co-authored paper submitted to **The Astrophysical Journal**.

Note: this research is the basis for my senior thesis, in progress

Teaching Experience:

January 2010 – Present -Teaching Assistant, **Brigham Young University**

Course: Thin-Film Physics (graduate level course)

Instructor: Dr. Kerry Young

Activities:

- Grading students' papers

August – December 2010 - Teaching Assistant, **Brigham Young University**

Course: Introductory Applied Physics II

Instructor: Dr. Anna Scholtz

Activities:

- Answered hundreds of students' questions regarding course concepts and homework

January – April 2010 - Teaching Assistant, **Brigham Young University**

Course: Principles of Physics 3: Electricity and magnetism

Instructor: Dr. Anna Scholtz

Activities:

- Answered hundreds of students' questions regarding course concepts and homework

August – December 2009 - Teaching Assistant, **Brigham Young University**

Received same assignment for Aug-Dec 2010

Course: Design, Fabrication, and Use of Scientific Apparatus

Instructor: Dr. Evan Wacaser

Activities:

- Helped over 50 students in 3 different sections troubleshoot LABView & Solid Works programs
- Supervised and assisted students personalized experiments

Publications:

E. Hovenweep, R.M. Hueckstaedt & H.S. Valdez. Radiative and Kinetic Feedback by Low-Mass Primordial Stars. 2011 *ApJ* **812** 101

H.S.. Valdez. Photoevaporation of Cosmological Minihalos by the First Stars. Senior Thesis

Presentations:

H.S.. Valdez, E. Hovenweep & R. M. Hueckstaedt (March, 2011). Photoevaporation of Cosmological Minihalos by the First Stars. Presentation in Annual Spring Research conference. Brigham Young University, Provo, Utah.

H.S.. Valdez, K.K. Young, G.L. Hought & B. Hook (March, 2010). Searching for Natures Missing Crystal Structure. Presentation in Annual Spring Research conference. Brigham Young University, Provo, Utah.

H.S.. Valdez, K.K. Young, G.L. Hought & B. Hook (October, 2009). Searching for Natures Missing Crystal Structure. Presentation in The American Physical Society conference. University of Texas El Paso, El Paso, Texas.

International experience:

Europe (1991-92): Lived & attended school in Rydbo, Denmark, for one year with family. Visited various European countries.

Asia (1998-99): Lived in Taipei, Taiwan, and Beijing, China, for one year with my family. Traveled around China and gained some familiarity with Mandarin Chinese.

South America (2005-07): Served as a voluntary missionary in northern Brazil for The Church of Jesus Christ of Latter-day Saints for two years. Fluent in Portuguese.

Other items:

- *Hobbies:* Vocal music, sports, fishing