

Hawai'i Student Astronomy Research Projects

AAVSO Fall Meeting

November 7, 2009

Boston, MA



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James D. Armstrong, UH IfA Maui
Mike Nassir, UH Physics/Astronomy



Overview

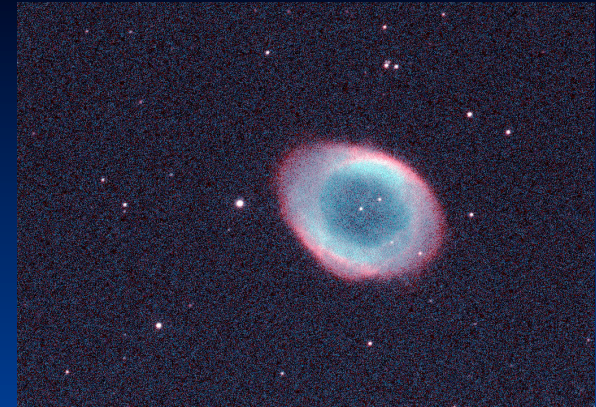
- Key Resources – Telescopes and Mentors
- HI STAR Program Goals & Action Plan
- Student Projects at Science Fairs
- HI STAR Follow Up
 - Alumni → College → Programs
- Presentation: Circumstellar Disks of Stars
 - Mimi Hang

Telescope Resources



(1) 2 m Faulkes Telescope North (FTN), Haleakala, Maui, owned by LCOGT

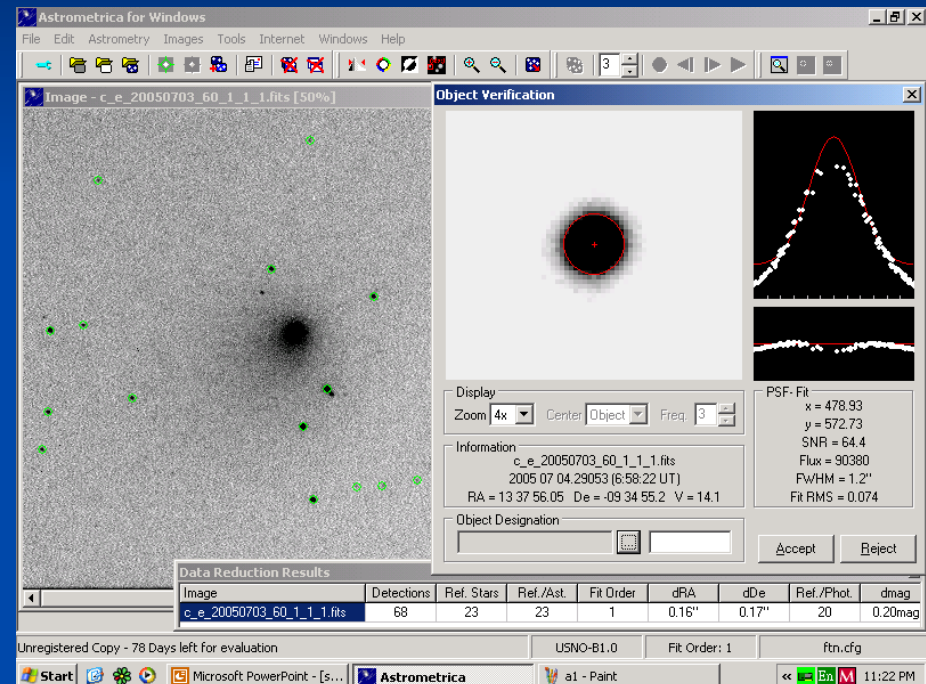
(3) GRAS – Global Rent-a-Scope that Bill Dillon got for us has not been used.



(2) 0.6 m DeKalb Telescope, Indiana, 5-6 hr time difference, owned by Donn Starkey

Image Processing Resources

- 10 laptops to loan.
- Mira for photometry
- Astrometrica
- Photometrica - from M. Kran and G. Klingenberg for our advanced students.
- Future – AIP Win for spectroscopy??

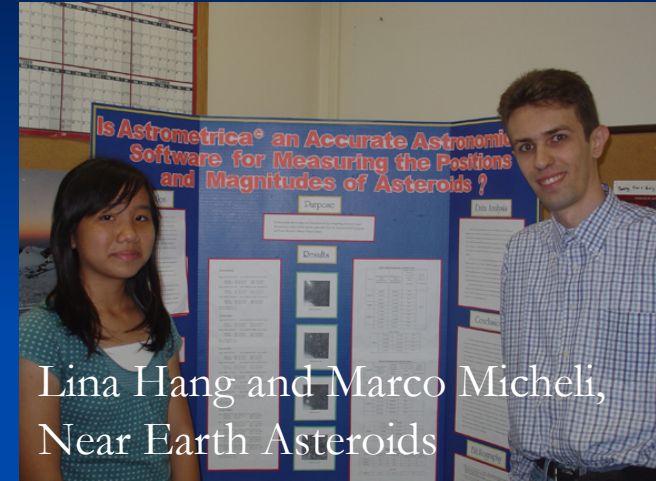


IfA Mentor Program

Motivation - access to 2 m
Faulkes Telescope.

Mentors & students are
matched according to:

1. Research topic of
interest.
2. Personalities.



Lina Hang and Marco Micheli,
Near Earth Asteroids



Dave Rupke



Mike Nassir



Donn Starkey, DeKalb

HI STAR

Goal: STEM college majors for students

Objective: Pre-college students conduct authentic research projects.



- Students learn physics/astronomy basics and image processing skills.
- Astronomer mentors design and lead group projects.
- 12-16 yr old students continue projects for Science Fair entry.
- HI STAR alumni serve as junior mentors and continue to be mentored.
- Cost - \$500 @ student who pay only \$100 registration fee.

HI STAR Science Fairs Projects

2007 – 3 projects in 2008 Fairs/3 students

2008 – 6 projects in 2009 Fairs/10 students

~40% (13 of 33 students) completed projects

2009 – 63% (10/16) working on projects for 2010 Fair.

Recruiting Workshops are crucial for HI STAR

Other Islands - 7 since 2007
Oahu – 4-6 sessions each for
SPARK program in 2008 and
2009



2009 Hawaii Science Fair Junior Display Division



Best of Category Award
– Physics & Astronomy

12 yr old Malia Swartz
with IfA mentor Dr. Ilia
Roussev from Bulgaria.

Currently working on
solar minima/pandemic
correlation research.

What is the Rotation Period and Shape of Asteroid 1270 Datura?



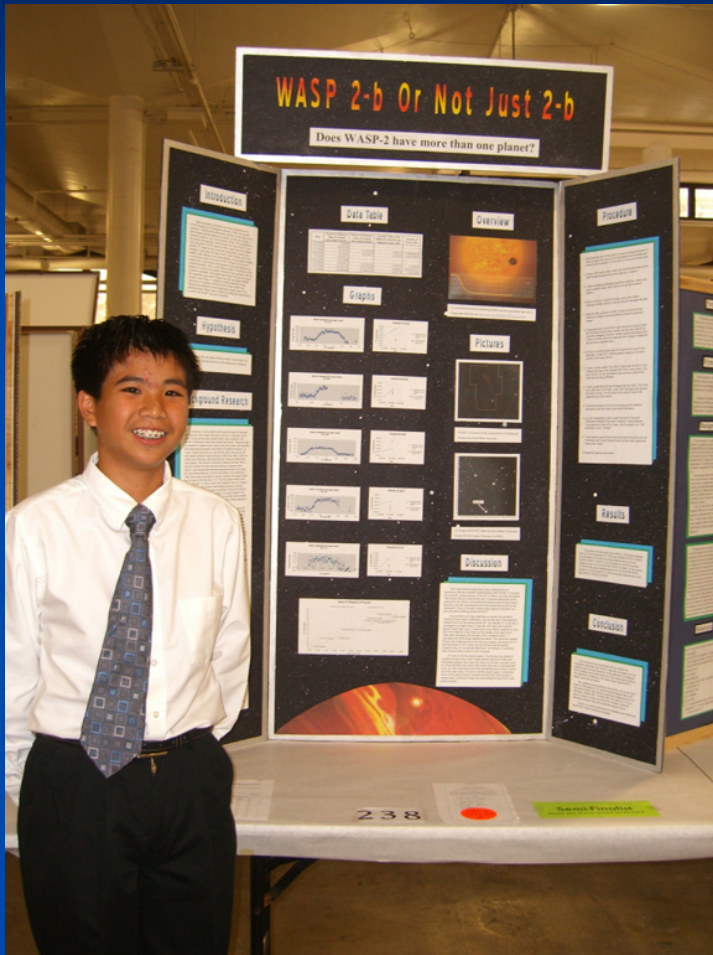
13 yr olds Gina Hyun and Kira Fox, SPARK and HI STAR participants who are working on Main Belt Comet recovery for MBC mission proposal.

2009 Hawaii State Science Fair -
2nd place Junior Research Division
Best of Category Award for Physics
and Astronomy



IfA graduate student mentor Nick Moskovitz received his PhD in May, and is now at Carnegie Institute of Science, Washington DC

Extrasolar Planet – Comparison of Theoretical and Experimental Transit Times of WASP 2b



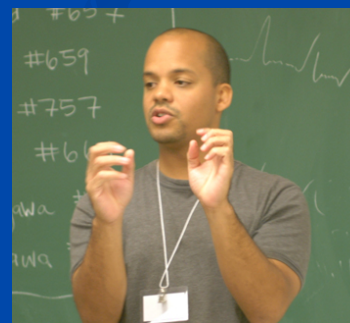
Travis Le, 16 yr old, has a Vietnamese immigrant, electrical engineer father

Awards:

2009 Intel International Science and Engineering Fair – AAPT 3rd Award

2009 Hawaii State Science Fair – 3rd place Senior Research Division + Sigma Chi, HI Academy of Science and other awards

Astronomer Mentors

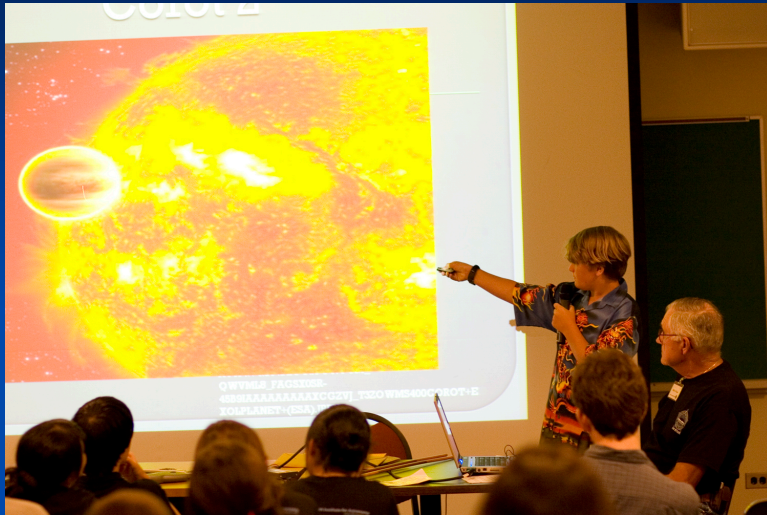


Dr. John Johnson, NASA Exoplanet Institute



Dr. JD Armstrong, UH Maui IfA

2009 HI STAR Project Presentations



Projects on:

Comets, Asteroids, Stars

Extrasolar Planet, Nebula

Galaxies, Sunspot Cycles



HI STAR Student Role Models

Iat Jeong, 2007 HI STAR

- Astronomy software mentor

Mimi Hang, 2007-2008 HI STAR

- 2006 Comet Tempel 1
- 2008 Mass of Galaxies Projects
- 2009 HI STAR counselor and comet/nebula project mentor

Travis Le, 2008-2009 HI STAR

- 2009 student aide and extrasolar planet project mentor to 7th grader.



Follow Up of HI STAR Students

Name, Gender, Year of Graduation	College or School	College Major and/or Program
Iat Jeong (m), 2007	Illinois Inst of Tech	Electrical Engineering
Mimi Hang (f), 2008	Mt. Holyoke	Physics/Chemistry 2009 Summer Research
Melody Lindsay, 2009	Princeton	Mechanical Engineering
3 students (50%), 2009	OSU, U FL, Marines	Business Manage., Span Educ, Infantry
Kira Fox & Gina Hyun, 2013	Kaiser High	NASA Ames Inspire

Challenges

- Committed teachers or parents needed.
- Follow up of other island students is difficult.
- Grad student/postdoc mentor replacements.
- Grants/donations needed.

**HI STAR Has
Fantastic Human Resources!**

MAKE A DIFFERENCE!

- Collaborate for resources.
 - Share your science passion.
 - Recruit curious students.
 - Be a mentor for projects.
 - Enjoy doing EPO (Education and Public Outreach)
- &
- You will have Fantastic Outcomes. 😊



Acknowledgments

- Karen Meech – UH NAI team PI, EPO funding
- Wayne Rosing – Las Cumbres Observatory Global Telescope
- Donn Starkey – DeKalb Observatory
- Herbert Raab – Astrometrica
- Astronomer Mentors – Dave Rupke, Elena Moise, Ilia Roussev, Jana Pittichova, Roberto Mendez, John Johnson
- Graduate Student Mentors - Marco Micheli, Nick Moskovitz, Joseph Masiero, Geoff Mathews
- REU Student Mentors – Nicole Cabrera, Tereka Hart
- Donors – Mark and JoAnn Schindler, Wayne Rosing
- SPARK director for laptops loan – Susan Kusunoki
- IfA staff – Adrian Lee, Diane Tokumura
- Photographers – Katie Whitman, Karen Teramura

What's Next?

**Circumstellar Disk Project
Presentation**

by Mimi Hang, HI STAR alumnus