

### First place: Harry Gaebler

Harry is a sophomore at Bloomington High School North in Bloomington, Indiana. He has won an all-expenses-paid trip to ALConExpo 2009, the Astronomical League's annual convention, which will be held August 7-8 in Long Island, New York. Explore Scientific generously supports the NYAA program, including the donation of one of its fine telescopes to the first-place finisher. Other prizes include a League plaque that will be presented to Harry at the Saturday night banquet at AlconExpo 2009. In addition, McDonald Observatory has generously donated a lifetime pass to its outstanding facility.

Harry became interested in astronomy in 4<sup>th</sup> grade because of a careers project he was involved with. He has won many awards during his participation in science Olympiad teams the past three years. Last year he taught himself the basics of Kepler's laws and the physics of binary star systems, since he hadn't taken a physics course yet at that time.

He has further increased his knowledge of astronomy by his participation in the University of Arizona Astronomy Camp in 2007. Harry then attended the Advanced Teen Astronomy Camp in 2008. The project that he



completed at the advanced camp was submitted with his NYAA application.

After returning from the advanced astronomy camp, he became one of two youth writers for a local science museum, the WonderLab Museum of Science, Health and Technology. The museum produces a weekly science article that appears in several newspapers in the area. It is also distributed to many schools through the Newspapers in Education (NIE) program. The goal is to excite upper-elementary-age children about science.

The title of Harry's project is "A Study of the Correlation Between Spiral Galaxy Distance and Morphology Using both Redshift and Extended Object Photometry." The study investigated the correlation between spiral galaxy distance and morphology. It employed redshift data to determine the distances to a sample of selected spiral galaxies. In each case, a consistent correlation between spiral galaxy morphology and distance was observed. A second related purpose of the project was to verify the validity of extended object photometry as an alternative method of measuring intergalactic distance.

The project was conducted in

# 2009 NATIONAL YOUNG ASTRONOMER AWARDS

By Carroll Iorg, Vice President

The Astronomical League is pleased to announce the top finishers for the **2009 National Young Astronomer Award** program. Thousands of high school students from across the country were eligible to compete for the 2009 award. Our national judges, all noted astronomers, once again were **Dr. David Hans Hough**, professor at Trinity University; **Dr. David L. Lambert**, from the University of Texas; and **Dr. Robert Stencel**, professor at the University of Denver. The League appreciates the substantial contribution our judges give to this program. All top finishers will receive a complimentary membership in the **International Dark Sky Association**.

two phases. The first one involved calculating distance based upon redshift data for 30 spiral galaxies. Ten galaxies from each morphological category (Sa, Sb and Sc) were chosen. Redshift data was obtained from the Simbad Astronomical Database. Next, the redshifts were used to measure each galaxy's recessional velocity. Then the distance to each galaxy was calculated using Hubble's Law and converted from megaparsecs and millions of light years.

The second phase involved collecting and interpreting observational data on four spiral galaxies not included in phase one, reducing the data, and performing extended object photometry to obtain the surface brightness. Once the surface brightnesses (flux) for two galaxies was established, it was possible to use the measurements in a formula derived from the combination of the fluxes and redshift distance of the galaxies to find the distance to each galaxy separately. These distances were compared to redshift distances found through the same method as that used in phase one to verify their accuracy. The purpose of the comparison was to show that extended object photometry is a valid method of finding intergalactic distances. The similarity of the results obtained through each method proves that extended object photometry is a valid method.

Harry's project established only that spiral galaxies appear to have a definite evolutionary pathway leading from the Sa to the Sc morphology. Further research is needed to determine definitively what causes the evolutionary pattern observed in the study.

### Second place: Jordan Bramble

Our second-place finisher, Jordan Bramble, is a senior at Kempsville

High School in Virginia Beach, Virginia. He is an active participant in the Back Bay Amateur Astronomers' collaborative research efforts with the Rapid Response Robotic Telescope (RRRT) at the Fan Mountain Observatory near Charlottesville, Virginia. The newly inaugurated 24-inch RC telescope is owned and operated by Norfolk State University, in collaboration with the University of Virginia. The



Back Bay Amateur Astronomers provide substantial volunteer efforts to operate the observatory, which the club helped build and test. (See September 2005 *Reflector*.)

Jordan will also earn an all-expenses-paid trip to ALConExpo 2009. In addition, he will be presented a plaque at the convention's award banquet for his achievement.

Jordan founded an astronomy club at his high school last year and currently serves as its president. He also participates in his club's "Boardwalk Astronomy" sessions at the Virginia Beach resort strip. Jordan has completed the League's Messier, Lunar Club and Outreach observing programs with his 10-inch Dobsonian telescope, using traditional star-hopping methods. He is currently working on several of the other observing programs.

Recently, Jordan was invited to make a presentation at the RRRT

Users conference at Norfolk State University. He gave an overview of his use of the telescope and presented a number of ideas for attracting high school students to the field of astronomy. Attendees included area high school teachers, university professors, a representative from NASA Goddard's Fermi Gamma Ray Telescope project, as well as other amateur astronomers.

Jordan has analyzed over 1,200 galaxies for Galaxy Zoo. His academic plans are to study astronomy and physics at the undergraduate level, then possibly pursue a PhD in astrophysics. Jordan collaborated on an asteroid search project using the RRRT telescope. The first goal was to write a successful script that the telescope could execute robotically and to demonstrate the method for detecting and ultimately possibly discovering asteroids. A second part of the project was to demonstrate that the telescope could be successfully remotely used by high school students.

Using TheSky6, ACP Planner with the Sky Plan Capture and the PinPoint Astrometric software, the search for asteroids consisted of repeatedly imaging a grid of CCD images in a sequence that records each square in turn, completing the whole grid, and then returning to the first square and repeating the process. Creating a grid called a "mosaic" near the ecliptic increases the chances of locating an asteroid, and positioning the search mosaic opposite the sun ensures that any objects crossing the grid will be at their brightest.

This project produced an acceptable script for the robotic operation of the telescope, and Jordan was able to successfully conduct an observing plan from a remote location.

### Third place: Gayathri Cheran

Our third-place finisher, Gayathri Cheran, lives in Burke, Virginia. She is a junior at Lake Braddock High School and a member of the Northern Virginia Astronomy Club. In addition, she founded an astronomy club at her school, in which she serves as president.

The research project submitted in the application packet was entitled "A Study of the Abundance of Wolf Rayet Stars." W-R stars are a classification of irregular variable stars whose members are among the most massive known in the



entire universe. These stars are characterized by a quantity of at least 20 or more solar masses, a high rate of mass loss, and surface temperatures ranging from 25,000 to over 50,000 Kelvin.

The purpose of the project was to determine the abundance of Wolf Rayet stars within the universe, through the determination of the percentage of the difference types of supernovae (11b, 1b, 1c and 1b/c). The percentage of these types of supernovae were found to be under 10 percent as had been predicted, and form only in spiral galaxies. This suggests that Wolf Rayet stars are rare, as is dictated by the current theories of stellar population, which state that massive stars are not common.

Last year, Gayathri attended Advanced Teen Astronomy Camp in Tucson, Arizona. She collaborated on a project to image various colliding galaxies, including UGC 10214 and NGC 7256, and then recreate their collision with an online simulation to model what these galaxies might look like in the future. The project showed that these galaxies would repeatedly collide while merging and eventually become giant ellipticals. After returning home from Astronomy Camp, she wrote an article about her experience. The article was published in her club's newsletter as well as in the December 2008 edition of the League's *Reflector*.

Her future plans include possibly volunteering at the National Air and Space Museum and participating in a NASA internship.

**Fourth place: Lauren Wyman**

Lauren is a junior at Beachwood High School, located in her hometown of Beachwood, Ohio.

She has actively participated in the astronomy section of Science Olympiad for the past two



years, receiving two third-place finishes.

Lauren interned at the John Glenn Research Center in Cleveland, Ohio. Although the center doesn't have a special astronomy-oriented section, she was able to connect the work that she did in the Glenn Center's materials and structures division with what she hopes to do as a future astronomer. Lauren currently volunteers at the Shafraan Planetarium in Cleveland.

For more information about the NYAA awards program, please contact Carroll Iorg, Vice President, at [carroll-iorg@kc.rr.com](mailto:carroll-iorg@kc.rr.com) (phone: 816-444-4878). Information is also available on the League's Website: [www.astroleague.org/](http://www.astroleague.org/). Astronomy club officers and members: please encourage your young club members and other young people you may come in contact with to apply for this award. There is a good variety in the subject matter of submissions received. Whether building an astronomy-related business, completing a strong science project related to astronomy, or doing research at a summer astronomy camp, these types of projects have a good chance of being top finishers.

# HEART OF AMERICA STAR PARTY

October 15 - 18, 2009

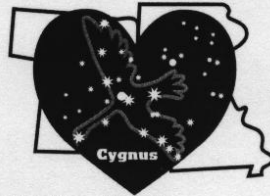
On the **Dark Sky Site** developed for and by amateur astronomers:

- \* Located for excellent seeing
- > Improved facilities with NEW building
- ~ Situated for nearby amenities and activities

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- \* 75 miles south, away from Kansas City lights
- \* Nearly 6.7 limiting magnitude (based on SQM-L averages)
- \* New fall date in 2009 for cool, crisp night skies
  - > Wide area has plenty of room for tents, trailers, RVs
  - > Electricity for astronomical equipment (first come, first serve)
  - > Portapotties and showers on site (Please bring your own drinking water)
  - > NEW building, provides a permanent shelter for programs and activities

For details:

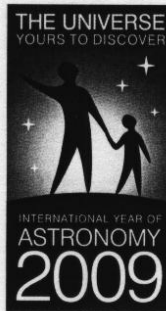
[www.hoasp.org](http://www.hoasp.org)

- ~ 15 miles from Butler MO for hotels, restaurants, etc
- ~ Bates County Museum of Pioneer History, in Butler
- ~ Nearby Civil War battle site: Mine Creek Museum

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