



# Huntsville Alabama L5 Society

Founded 1983. Ad Astra per Ardua - "To the Stars by Our Own Hands"

Space advocacy, education outreach and technology development



## 2015 HUNTSVILLE ALABAMA L5 SOCIETY (HAL5) ANNUAL REPORT TO THE MEMBERSHIP

Founded in 1983, Huntsville Alabama L5 Society (HAL5) is a not-for-profit 501(c)(3) educational organization that advocates exploration and settlement of space. Like our parent organization, the National Space Society (NSS), we are a mix of enthusiasts of all walks of life who share the belief that space development will improve our world in the areas of education, energy, environment, new resources, and ultimately room for humanity to grow.

We had a busy 2015 as we continued our long running monthly public lectures and education outreach activities. We returned to the Panoply Art Festival and Lowe Mill's STEAMFEST (Science, Technology, Engineering, Art and Math), and HAL5 created and sponsored a "Best Future City Supporting Space Economy" award at the 2015 Alabama Regional Future City Competition. We continued our High Altitude Lift-Off (HALO) amateur rocketry project, and we were awarded the NSS Chapter Excellence Award for Education Outreach for 2014!

### Monthly Programs

HAL5 holds free public lectures and membership meetings on the first Thursday of every month at the Huntsville Madison County Main Public Library. For special events, a different day and/or location, such as the U.S. Space and Rocket Center (USRRC), are used. A social at a local restaurant follows the program. Below is a summary of our 2015 monthly programs. A listing of our monthly programs since 1994 can be found at our website ([www.HAL5.org](http://www.HAL5.org)).



HAL5 2015 Monthly Program Flyers

**January:** Annual HAL5 membership meeting on the state and health of HAL5, news about NSS and upcoming activities.

**February:** Impromptu membership meeting due to last minute speaker's schedule conflict.

**March:** Joint *Pass the Torch* program with USSRC on NASA Orion Exploration Flight Test (EFT-1) with: Larry Price, Deputy Program Manager, Lockheed Martin Orion Program; Larry Gagliano, Deputy Project Manager, Orion Launch Abort Systems, Marshall Space Flight Center (MSFC); Roger Rieger, Director, Human Launch Services, United Launch Alliance.

**April:** Membership meeting.

**May:** "Cosmology and the Expansion of the Universe: from

*Edwin Hubble to the Hubble Space Telescope*" with Dr. Massimiliano Bonamente, Professor of Physics, Univ. Alabama at Huntsville (UAH).

**June:** "Planetary Seismology: What's Shakin' in the Solar System" with Dr. Renee Weber, Research Scientist, NASA MSFC and Science Co-Investigator of NASA InSight Mission.

**August:** Regular monthly program: "Coaxial Combusting Vortex Rocket Motor" with William H. Knuth: Founder/President, KEI Consulting Services.

Special special joint talk with Von Braun Astronomical Society (VBAS) on "Pluto, New Horizons Pluto-Palooza" with Jim Plaxco, President of the Chicago Society for Space Studies.

**September:** Book lecture, "How Far Would you go to Colonize the Stars?" with Nick Wyckoff, engineer and author.

**October:** "Evidence for Extraterrestrial Life" with Mr. Richard B. Hoover, Astrobiologist, Athens State University.

**November:** "The Infinite Loop: The Interplay Between Science Fiction, Technology, Science, and Exploration" with Toni Weisskopf, Publisher of Baen Books.

**December:** "New Horizons: NASA's First Mission to the Pluto System and the Kuiper Belt" with Mr. James E. Lee, Mission Manager, NASA MSFC.

### Outreach and Special Events

HAL5 participated in various outreach events and activities around town in 2015. Our biggest event this past year was at Panoply Arts Festival, where we partnered with Sci-Quest, followed by STEAMFEST and Astronomy Day.

### STEAMFEST

For the 2<sup>nd</sup> annual STEAMFEST at Lowe Mill, HAL5 brought out our Martian popsicle sticks catapult activity. The Martian theme backdrop featured an astronaut geologist with a bunch of clear plastic cups with various Martian bugs painted on them. The objective was to shoot various objects, like cotton balls, beans and pasta, into the aforementioned cups using the catapult. The idea is to investigate small items that have different shapes and mass, and to study the accuracy. It was a challenging and fun activity.



### Panoply Arts Festival

Less than a week after STEAMFEST, HAL5 outreach participated at the 2015 Panoply Arts Festival. HAL5 teamed up with Sci-Quest to do *Squibble Bot* arts. The



bot's battery off-centered motor provides the random squibble movement. The kids choose different markers and different weights and watched the bot draw different patterns.

Make-and-Launch Paper Air Rockets Columbia and Hampton Cove Elementary

HAL5 did "Make-and-Launch" paper air rocket outreach events with six graders at Columbia and Hampton Cove Elementary Schools in May. On day one of the two-day event, we worked with the students and teachers to make the paper air rockets. We gave general rules of thumb on rocket fin sizes and placement, as well as what to watch out for to ensure the building of a successful rocket. The kids were encouraged to explore different fin shapes and placements. Day two was launch day. We brought the trusty HAL5 paper air rocket launcher and watched the rockets fly!

Astronomy Day 2015



Photo courtesy of Chick-Fil-A University Dr, Huntsville

HAL5 returned to Monte Sano State Park to participate in the annual VBS Astronomy Day. Along with our handout materials, we also brought the *Pin the Payload on the International Space Station* game. An estimated 120 kids partook in the "Make-N-Launch" paper air rockets. HAL5 arranged to have the Chick-Fil-A cow from the University Drive store to partake in the activity. Chick-Fil-A donated 100 kids meal coupons. We also loved that the Chick-fil-A cow

built and launched a paper air rocket with the kids and that the images taken were posted on Chick-Fil-A University Drive store's Facebook page with the hashtag #spacecow.

The Martian SF vs SF panel at Rocket Republic Brewery

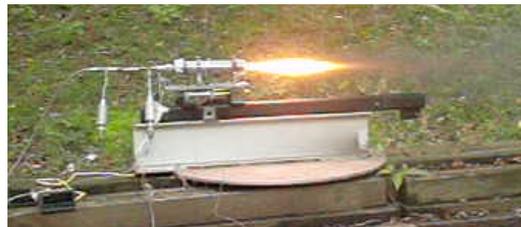
To celebrate the release of the movie "The Martian," HAL5, along with the local AIAA chapter, the National Space Club, and RocketHatch, co-sponsored "The Martian: Science Fact vs. Science Fiction" at the Rocket Republic Brewery. HAL5 brought the suitcase rocket, some smaller HALO hybrid rockets and our 4" battleship hybrid with HPTB fuel grain, along with advertisements for our upcoming programs and information about HAL5 and NSS.

2015 Alabama Regional Future City Competition

HAL5 supported the regional competition held on the campus of the University of Alabama in Huntsville. Three HAL5 judges looked at the 20 or so entries and asked the youngsters question about outer space applications of their designs. A special HAL5 award was presented to the team with the best scores.

Project HALO

Project HALO is open to HAL5 members and meets once a week. We are slowly ramping up our work on a tube launch rocket. Initial design has been completed. This past year we saw pressure proof tests of a new carbon fibered wrapped case and testing of various 1" nitrous/coal powder HPTP hybrid motors. We also continued to work with our friends in Knoxville Tennessee on our next rocket's avionics package.

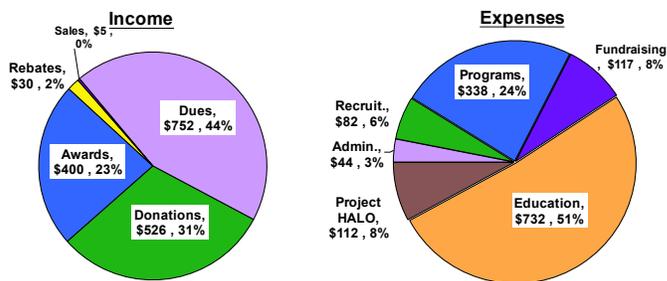


Administrative Activities

The HAL5 Executive Committee met every month to review society business and to plan events. Monthly program and special event announcements are posted on our website, on Facebook, on various local event calendars and sent out via our e-mail list. Paid members received special invitations to special events and social activities. HAL5 regular membership dues are \$16 per year, and \$8 for students and senior citizens. The membership dues allow us to support our various outreach hands-on activities and projects, competitions, membership gatherings and monthly programs. Project HALO support is a separate donation item from the regular membership dues. New member dues are prorated based on the month of joining. We ended 2015 with 57 paid members.

Financial

The HAL5 bank accounts had a net increase of \$288 in 2015 to \$6,563; however, since \$300 was overdue NSS award money from 2011, we pretty much broke even. Total income was \$1,713 (dues, donations, and award money), while total expenses were \$1,425. Educational outreach soared to \$732 due to increased activity and \$350 approved for 2016 Future City Contest prizes. Project HALO activity was only \$112 due to another slow year. Other programming, events, and social activities resulted in \$338 in expenses. Administrative, recruitment, and fundraising totaled \$243 (half for HAL5 promotional pens).



2015 HAL5 Officers (July 2014 to December 2015)

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|--------------------------|--------------------------------|
| President: Yohon Lo      | Vice President: Robert Bijvoet |
| Treasurer: Ronnie Lajoie | Secretary: David Newsome       |
| Membership: Robin Scott  | Education: David Hewitt        |
| Publicity: Josh Brock    |                                |

In closing, we thank you for your continued support, and welcome any and all feedback on how to better serve you and our community. See you at our next gathering!

*Ad Astra Per Ardua!*