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Surprising Young Stars in the Oldest Places in the Universe

By Dr. Ethan Siegel

Littered among the stars in our night sky are the famed deep-sky objects. These range from extended spiral and elliptical galaxies millions or even billions of light years away to the star clusters, nebulae, and stellar remnants strewn throughout our own galaxy. But there's an intermediate class of objects, too: the globular star clusters, self-contained clusters of stars found in spherically-distributed halos around each galaxy.

Back before there were any stars or galaxies in the universe, it was an expanding, cooling sea of matter and radiation containing regions where the matter was slightly more dense in some places than others. While gravity worked to pull more and more matter into these places, the pressure from radiation pushed back, preventing the gravitational collapse of gas clouds below a certain mass. In the young universe, this meant no clouds smaller than around

a few hundred thousand times the mass of our Sun could collapse. This coincides with a globular cluster's typical mass, and their stars are some of the oldest in the universe!

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President's Article

By Gordon Hansen

Happy New Year! I hope everyone had a safe and happy holiday season and you survived the recent arctic blast without any frost bite.

This is my last President's Corner. You did me the honor of electing me as your president three times and our by-laws say I'm done. On January 23rd you will elect a new slate of officers. It's been a privilege to hold this office and for the most part a lot of fun. I may be stepping down from this office, but, I'm not going anywhere. The best part of our hobby is the camaraderie we develop when sharing the stars above.

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STAR STUFF

January 2014 - Vol. 24 No 1

STAR STUFF is published eleven times each year by:

FORD AMATEUR ASTRONOMY CLUB
P.O. Box 7527
Dearborn MI 48121-7527

PRESIDENT: Gordon Hansen
VICE PRESIDENT: Jon Blum
SECRETARY: Doug Bauer
TREASURER: Chuck Jones
WEBMASTER: Greg Ozimek
NEWSLETTER EDITOR: Jennifer Zdanowski

Club Information:

The Ford Amateur Astronomy Club (FAAC) meets on the fourth Thursday each month, except for the combined November/December meeting on the first Thursday of December - at Henry Ford Community College Administration Services and Conference Center in Dearborn. Refer to our website for a map and directions (www.fordastronomyclub.com).

The FAAC observes at Spring Mill Pond within the Island Lake State Recreation Area near Brighton, Michigan. The club maintains an after-hours permit, and observes on Friday and Saturday nights, and nights before holidays, weather permitting. The FAAC also has use a private observing site near Gregory Michigan and Lake Erie Metro Park. See the FAAC Yahoo Group* for more information.

Observing schedules and additional info are available on our website, or via the FAAC Yahoo Group.* Or call the FAAC Hotline, for info and leave a message, or ask questions: 313-757-2582. or send email inquiries to info@fordastronomyclub.com.

Membership in the FAAC is open to anyone with an interest in amateur astronomy. The FAAC is an affiliate of the Ford Employees Recreation Association (F.E.R.A.). Membership fees:

Annual - New Members: \$30 (\$15 after July 1)
Annual - Renewal: \$25 (\$30 after January 31)

Membership includes the STAR STUFF newsletter, discounts on magazines, discounts at selected area equipment retailers, and after-hours access to the Island Lake observing site.

Astronomy or Sky & Telescope Magazine Discounts

Obtain the required form from the FAAC club treasurer for a \$10 discount. Send the completed form directly to the respective publisher with your subscriptions request and payment. Do not send any money directly to the FAAC for this.

Star Stuff Newsletter Submissions

Your submissions to STAR STUFF are welcome! Send your story and/or images to the editor: StarStuff@fordastronomyclub.com. Email text or MS Word is fine. STAR STUFF will usually go to press the weekend prior to each general meeting. Submissions received prior to the 15th can be included in that issue.

* FAAC Members are welcome to join our Ford Astronomy Club Yahoo!Group. Messages photos, files, online discussions, and more! URL: groups.yahoo.com/group/FordAstronomyClub.

This months background photos of the moon Page 1 courtesy of John Kirchhoff. See more of John's photos at:

<http://www.flickr.com/photos/33926475@N06/with/4311533997/>

As my predecessors would surly attest, no one can do this job alone. I've been fortunate to have a great team of people supporting me. My fellow officers: Jon Blum as Vice President, Doug Bauer as Secretary, and Chuck Jones our Treasurer. Jennifer Zdanowski - StarStuff editor, Greg Ozimek - Web Master and Pizza Man, Dan Barriball - Social Media, Ellen Duncan and now Mike Dolsen - pop at every meeting, Syed Saifullah - ALCOR Astronomical League replacing John Schroer. I can't overlook Frank Ancona who is responsible for all of the great speaker's we've have at our meetings - truly an unsung hero. Frank, Jim Frisbie, and John Schroer who put together the annual Expo & Swap Meet. Bob FitzGerald, Jim, and Frank make up our nominating committee. All of those people along with Pat & George Korody, Bob MacFarland. Dennis Salliotte, Tim Campbell, Don Klaser, Greg Knekleian, Art Parent, and Ken Anderson attend most board meetings providing invaluable assistance. (If I've overlooked someone I apologize.)

A special thanks needs to go to Henry Ford Community College for allowing us to hold our meetings there. This is a huge benefit - our treasury would be a lot smaller if we had to rent a facility. Our relationship with HFCC allowed us to partner with the HFCC student astronomy club. Seeing young people in our audience is a joy. I need to give credit to our club members who conduct the HFCC Planetarium presentations: Dennis Salliotte, Bob FitzGerald, Tim Campbell, Larry Halstead, and Bob Clubb. Their efforts help to cement our ties with the college.

I wanted to make sure I thanked all of the efforts of those mentioned above and to all the others who have participated in out-reach events the club participated in. I also want to make sure you all realize how many people and how much effort is required to make this club work. It's enjoyable work - get more involved!

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Globular Cluster NGC 6397. Credit: ESA & Francesco Ferraro (Bologna Astronomical Observatory) / NASA, Hubble Space Telescope, WFPC2.

Surprising Young Stars in the Oldest Places in the Universe

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These compact, spherical collections of stars are all less than 100 light-years in radius, but typically have around 100,000 stars inside them, making them nearly 100 times denser than our neighborhood of the Milky Way! The vast majority of globular clusters have extremely few heavy elements (heavier than helium), as little as 1% of what we find in our Sun. There's a good reason for this: our Sun is only 4.5 billion years old and has seen many generations of stars live-and-die, while globular clusters (and the stars inside of them) are often over 13 billion years old, or more than 90% the age of the universe! When you look inside one of these cosmic collections, you're looking at some of the oldest stellar swarms in the known universe.

Yet when you look at a high-resolution image of these relics from the early universe, you'll find a sprinkling of hot, massive, apparently young blue stars! Is there a stellar fountain of youth inside? Kind of! These massive stellar swarms are so dense -- especially towards the center -- that mergers, mass siphoning and collisions between stars are quite common. When two long-lived, low-mass stars interact in these ways, they produce a hotter, bluer star that will be much shorter lived, known as

a blue straggler star. First discovered by Allan Sandage in 1953, these young-looking stars arise thanks to stellar cannibalism. So enjoy the brightest and bluest stars in these globular clusters, found right alongside the oldest known stars in the universe!

Learn about a recent globular cluster discovery here: <http://www.nasa.gov/press/2013/september/hubble-uncovers-largest-known-group-of-star-clusters-clues-to-dark-matter>.

Kids can learn more about how stars work by listening to The Space Place's own Dr. Marc: <http://spaceplace.nasa.gov/podcasts/en/#stars>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Treasurer's Report January 05, 2014

By Chuck Jones

Ford Amateur Astronomy Club Balance Sheet As of January 8, 2014

| | Jan 8, 14 |
|---------------------------------|------------------|
| ASSETS | |
| Current Assets | |
| Checking/Savings | |
| CD 200599272 | 1,058.45 |
| CD 205196033 | 1,003.32 |
| CD 89265268 | 1,105.33 |
| Checking | 760.49 |
| FAAC Savings | |
| Equipment | 1,781.43 |
| Scholarship | 473.83 |
| Total FAAC Savings | 2,255.26 |
| Petty Cash Account | 104.52 |
| Total Checking/Savings | 6,287.37 |
| Other Current Assets | |
| GLAAC | 3,779.94 |
| Total Other Current Assets | 3,779.94 |
| Total Current Assets | 10,067.31 |
| TOTAL ASSETS | 10,067.31 |
| LIABILITIES & EQUITY | 0.00 |

Club Wear

You can order online from LL Bean, using the instructions contained in a file that you can view on our club Yahoo Group website Club Wear file folder at

<http://tech.groups.yahoo.com/group/FordAstronomyClub/files/Club%20Ware/>

Meeting Agenda - January 5th

HFCC – Berry Auditorium -Admin. Services & Conference Center www.fordastronomyclub.com
5:30

Opening/Introduction/Member Observing

Main Presentation:

Any Landing You Drive Away from Is a Good One
Neil Mottinger

Tech Talk:

Officer Elections All

Club Projects/Committees/Member Support

Club Business/Secretary/Treasurer/Equipment Reports

President's Corner

By Gordon Hansen

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Some club business:

Sirius Award nominations. It's not too late to nominate someone for this award. If you would like to nominate someone, please send me their name and a brief summary of their accomplishments. Send it to ghhansen@comcast.net. Deadline is January 31st. The award will be presented at the annual banquet.

The 2014 Expo & Swap will be held on Saturday, March 15th.

The annual club dinner is on Saturday, May 17th.

Mark your calendars.

Once again, thank you for allowing me to be your president for the last three years.

Astro Imaging SIG

Gordon Hansen

All are invited to join us in the Astro Imaging SIG meetings, to share and discuss images, experiences, and techniques.

We always have a good time, with lively discussion, and sharing of valuable information.

Next meeting is **February 13th**. The meeting room location – HFCC Admin. Services and Conference Center (same building), Berry Amphitheater Auditorium.

Topics invited. Pizza served.

FAAC Events 2014

**Saturday January 18th - Ice Daze at Lake Erie
Metro Park**

Saturday March 15th - Expo & Swap

Saturday May 17th - Annual Club Banquet

*Background Photo from Lunt Solar Scope Image taken at the
Hector J Robinson Observatory, June 28, 2010*

One FAAC members blog

<http://hjrobservatory.blogspot.com/>

A few updates on the observatory, quick articles and photos. I'll try to improve my writing on this blog. Also, I try to keep daily updates on this blog. - Greg Knekleian, HJRO volunteer.

Member Photos



Above: Photo taken by Greg Knekleian through Ken Anderson's large Dob. No processing. 20mm Ethos eyepiece in lens discovery.

REMINDER: FAAC membership renewals are due by January 31, 2014.

Annual – New Member: \$30

Annual – Renewal: \$25 (\$30 after January 31)

Send your check for \$25 to:

FAAC
P.O. Box 7527
Dearborn, MI 48121-7527

Or bring your money to the FAAC General Meeting at 5:30 PM in the Berry Amphitheater Auditorium in the Administrative Services and Conference Center on the campus of Henry Ford Community College.

If you have a new Address, Phone Number or e-Mail address please include that information with your renewal.

Membership includes the STAR STUFF newsletter, discounts on magazines, discounts at selected area equipment retailers, and after-hours access to the Island Lake and Lake Erie Metropark observing sites, use of the FAAC Yahoo Group, and mentoring program.

FAAC General Meeting Minutes

December 5th, 2013

By Doug Bauer

Opening:

The meeting was called to order in the Berry Auditorium at 5:35 PM by President, Gordon Hansen. All attendees introduced themselves. There were about 35 people in attendance.

Observing Experiences:

Several Members had observed comets Lovejoy and ISON

What's Up in December - John Schroer from Cincinnati via Skype:

John covered various objects that will be up during December:

- Moon
- Jupiter
- Mars
- Saturn
- Venus
- Pleiades
- Orion and M42

Main Presentation: Collecting Photons - Jim Renard

Jim gave a presentation Astrophotography. Jim has been doing astrophotography for many years and has an observatory with a custom built 20 inch Richey-Cretien telescope and custom built mount. His astrophotos are incredible. He suggested that if you want to do astrophotography you start with basics:

- DSLR or CCD Camera
- Tripod
- Notebook
- Software (examples include: Deep Sky Stacker, CCD Soft, MAX DL, PIX Insight, CCD Stack, Photoshop)
- Start with large objects constellations, comets, north lights...

Moving to more complexity:

- Piggyback Camera
- Camera Mount
- Shutter Release
- Learn to read the Sky for conditions - Grade the sky to decide which objects are most appropriate for the conditions
- Notebook

Deep Sky Objects:

- Telescope

- DSLR or CCD camera
- Guiding
- Notebook
- Start with easier bright objects
 - Open Clusters (great way to test focus)
 - Globulars
 - Bright Nebula
- Jim showed some great Photos - M13, M92, M15, M2, M3, M14, M53, M56, The Moon (6 panel Matrix in Color and 16 Panel Matrix in LRGB) and a lunar eclipse

Move to Fainter Long Focal Length and Exposure Objects:

- Nebula
- Galaxies
- Make sure you keep notes, that is how you learn what works and what doesn't
- Jim showed more fantastic images (IC1396, IC5146, M1, M52, M16, M17, m20, M27, M78, NGC 6823, NGC 6888, NGC 6960, NGC 7023, and many more)
- Many of these images had 20 or more hours of imaging and were taken over several years with a lot of time doing the processing.
- The images were simply incredible!

Tech Talk: Show and Tell - Various Club Members displayed some of their recent acquisitions (in case you needed Christmas gift ideas)

- George Korody had photos of his new 17" Plane Wave Scope in his observatory
- Gordon Hansen showed his DC Stepper Focuser
- Chuck Jones showed his two different autofocusers
- John McGill modeled his observing jacket with built-in dark observing hood and a desiccant telescope plug for keeping moisture out of sealed tube telescopes
- Doug Bauer demonstrated his xx16g Orion Truss Tube Dob with GoTo controls
- Greg Knekleian demonstrated his homemade tracking camera mount, which was an old NEXT Star mount with a handmade wooden dovetail, rods and clamps that tracks the sky to enable photography. He also had a zoom telephoto lens he added to his Canon camera.
- Syed Saifullah showed his new 10X50 Pentax Binoculars - (I thought I saw Bob Fitzgerald give a standing ovation)
- Brian Kutscher demonstrated his iOptron Star Tracker and Tripod

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FAAC General Meeting Minutes December 5th, 2013

By Doug Bauer

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Tech Talk: (continued)

- Tim Campbell demonstrate the following gadgets:

1) Red LED headlight: ZebraLight H51r
http://www.zebralight.com/H51r-Red-LED-AA-Headlamp-ship-to-US-customers-only_p_63.html

2) Bluetooth wireless serial port: Roving Networks FireFly RN-270M <http://www.microchipdirect.com/ProductSearch.aspx?keywords=RN-270M>

3) Camera clamp mount: RAM Mounts (various parts) <http://www.rammount.com>

4) Cable management: Panduit Latching Wire Clips LWC19-A-C20 or LWC25-A-C20 (LWC19 = .19" inner diameter; LWC25 = .25" inner diameter) <http://www.panduit.com> Also available from other sources (I ordered them from amazon.com)

Business Meeting:

- Secretary's Report in Star Stuff - Approved
- Treasurers Report in Star Stuff - Approved
- Frank Ancona represented the FAAC Nominating Committee (Frank Ancona, Jim Frisbie, Bob FitzGerald) to presented the list of candidates so far for the January FAAC Board Positions:
 - President - Tim Campbell
 - Vice-President - Art Parent
 - Treasurer - Gordon Hansen
 - Secretary - Ellen Duncan

Anyone wishing to join the slate of candidates can be nominated at the January meeting.

Bob FitzGerald reminded everyone that if they are interested in running the planetarium shows at HFCC they should contact any of the current planetarium volunteers: Bob FitzGerald, Tim Campbell, Dennis Salliotte, Bob Clubb.

Projects and Events:

- January 18th - Ice Daze at Lake Erie MetroPark

The formal meeting was adjourned by President, Gordon Hansen at 8:05 PM.

FAAC Equipment Report January 11, 2014

| Item | Currently Held By: | Date Last Verified |
|---|--------------------|--------------------|
| Telescopes | | |
| 4" Dobsonian | George Korody | 8/14/13 |
| 4 1/2 " Galileo Alt/Az Reflector | James French | 10/26/13 |
| 8" Orion 8XTi Dobsonian | James French | 10/26/13 |
| 4" Donated Reflector in need of repair | George Korody | 8/14/13 |
| Presentation Tools | | |
| Projector | Gordon Hansen | 1/8/14 |
| Projection Screen 8' | Bob MacFarland | 1/10/14 |
| Speaker System w/wireless mic | Bob Mac Farland | 1/10/14 |
| Bullhorn | George Korody | 9/19/13 |
| DVD Player | Gordon Hansen | 1/8/14 |
| Projection Screen 6' | Gordon Hansen | 1/8/14 |
| Demonstration Tools | | |
| Weight On Planets Scale | George Korody | 8/14/13 |
| Lunar Phase Kit | Bob MacFarland | 1/10/14 |
| 100 ft Scale Model Solar System Kit | Bob MacFarland | 1/10/14 |
| Display Items | | |
| Astronomy Event Sign (3' X 6') | Gordon Hansen | 1/8/14 |
| PVC Display Board - Folding | Dennis Salliotte | 1/8/14 |
| Banner - Large (32" X 16') | Dennis Salliotte | 1/8/14 |
| Banner - Medium (24" X 72") | Tim Campbell | 1/11/14 |
| Banner - Small (24" X 32") | Bob MacFarland | 1/10/14 |
| Tri-Fold Presentation Boards | Don Klaser | 3/13/13 |
| Tri-Fold Poster Board (Early Club Photos) | George Korody | 8/14/13 |
| Other | | |
| Sky Quality Meter | Syed Saifullah | 12/5/13 |
| Canopy (10' X 10') | Greg Ozimek | 1/4/14 |
| Equipment Etching Tool | Dennis Salliotte | 1/11/14 |
| Pop Cooler | Michael Dolsen | 12/5/13 |

Ford Amateur Astronomy Club
Star Stuff Newsletter
P.O. Box 7527
Dearborn MI 48121-7527

