NORTH HOUSTON ASTRONOMY CLUB

North Star Newsletter

March 2011 Volume XI No. 3

NHAC General Meeting

February 25, 2011

Novice Program

" Naked-Eye Observing: Constellations, Meteors, and Satellites "

By Aaron Clevenson

6:30 - 7:15 in CLA 221, The Cosmic Forum

Main Presentation

Beginning at 7:30 in CLA Teaching Theater

Featuring:

- NHAC news and announcements
- "What's Up Doc?" by Aaron Clevenson
- "Professor Comet Report" by Justin McCollum

Featured Speaker

Steve Goldberg (HAS) on the Texas Star Party

Inside This Issue

The Deadline for submissions for the April 2011 newsletter is March 11, 2011.

Thank You!

A very special Thank You to Bill Christian for his fabulous presentation on solar astronomy and sunspots. Bill discussed the sun, its components and the advances made by solar observatories at the January general meeting. Using images from the world's most sophisticated solar telescopes, he explained how sunspots and flares affect the Earth's atmosphere and communications industry.

2011 NHAC Officers

2011 Elected Officers

President
Bruce Pollard
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Vice President
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vicepresident@astronomyclub.org

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Membership Committee Chairperson
Bruce Pollard/Stuart Davenport
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Program Committee Chairperson
George Marsden
program@astronomyclub.org

"It is the chiefest point of happiness that a man is willing to be what he is."
Desiderius Erasmus (1466 - 1536)

NHAC is a proud member of:

Night Sky Network NASA

Astronomical League

ida International Dark-Sky Association

News and Tidbits

Notes from the Treasurer

One last friendly reminder about dues. . .

If you have not turned in your dues for 2011 by February 28, you will be dropped from the NHAC roster. You may pay at the meeting on Friday, February 25 or contact Mary at treasurer@astronomyclub.org.

If you are not sure, just stop by and ask at the meeting, there will be an up-to-date roster that we can easily check. Hope to see everyone at the meeting Friday!

Special Club Rate Magazine Subscriptions

Club rates for personal subscriptions to ASTRONOMY and SKY & TELESCOPE magazines save about 25% over the normal subscription costs. Each magazine has its own procedure to subscribe based upon initiating the order through the club treasurer.

For ASTRONOMY magazine, write your check to NHAC (or pay in cash) for $34 (or $60 for 2 years). The Treasurer then validates your membership by writing a club check for the same amount to the magazine and sending them your address. Renewals must also be processed through the club. Please save your renewal documents for this process.

For SKY & TELESCOPE, pay the club $33 (or $32.95 if by check). As above, we write a club check to validate your membership and start your subscription. SKY & TELESCOPE renewals are processed directly by the subscriber.

Be sure to include a clearly printed name and address sheet for any new subscriptions

Upcoming Star Parties

The **Texas Star Party** will be held May 29 - June 5, 2011 at the Prude Ranch near Fort Davis, Texas. For more information and registration go to their website at: **www.texasstarparty.org**

The **Okie-Tex Star Party** will be held September 24 - October 2, 2011 at Camp Billy Joe in the Black Mesa Area of Oklahoma. For more informaton and registration go to their website at: **www. okie-tex.com/index.php**

The 28th Annual **Eldorado Star Party** will be held October 24 - 30, 2011 at the X Bar Ranch Nature Retreat in Eldorado, Texas. For more information and registration go to their website at **www.texasstarparty.org/eldorado.html**

Remember to check out the North Houston Astronomy Club Facebook and Twitter pages:

http://www.facebook.com/NorthHoustonAstronomyClub

http://www.twitter.com/NHAC_Info

The December Member Survey-Study

By: George Marsden, Program Committee Chairman

Background

The study we presented in December was quickly assembled to meet the occasion, yet it produced some interesting and useful results. The following comments are made from the perspective of the Program function of the club.

The Studies

There were several pieces as you will recall ranging from free form response to limited multiple choice, even one asking for a self assessment of your progress as an amateur.

The Study

Let me address them by category.

The Self Assessment progress line lets us know at what levels we should aim so that our programs and classes will "connect" with our level of understanding. Speakers and teachers should find this valuable information that will help them know their audience. It informs us that we are a club of a great many early stage amateurs with fully half of our members placing themselves in the novice category, and with considerably fewer than one-fourth approaching the "accomplished" area.

The Limited Selection Multiple Choice study was a completely different approach. It gives us important quantitative information on the strength of member interests. How can this be used? Two ways come to mind. For speakers who have wide interests and capabilities (usually professors) our job will be to find the good speaker and let them select the topic, preferably from the results of this particular study. In other cases, we will want to select the topic and find the speaker. Sounds pretty straightforward, doesn't it? Yea, sure. . . you know very well there will be one heck of a negotiating, juggling and scheduling problem, but that's what we're here for.

The five free-form study responses were also interesting and in some places get a big "smiley." In one, pizza is preferred over sandwiches. (I like variation too, so that chap is on track.) Several folks just like "food." Perhaps we should start a gourmet SIG to handle the snack table. Well, we asked for free-form comment and we got it. Don't think that I'm not happy with the results. There are a number of gems in the mix and we will try to find a way to bring them to bear.

Look these studies over and give us feed-back. Take your thoughts to our Program Committee members so we can mull them over as we develop future programs.

I'll conclude with my thanks to all who participated. I am very happy with the results.....well beyond what I thought I'd be. The results are so good, I'd like to keep them all to myself, but I know that won't do. There's material here for the whole club if officers and members alike want ideas. And looking out into the future, we may have the nucleus of a program for next December right here in our hands.

December Member Survey - page 2

The Three Things Questionnaire

(Well, we've pulled several parts together, so there are six sections below)

How Members See Themselves from Novice to Accomplished Amateur

BY QUARTILES: Q1@10%, Q2@25%, Q3@40%

Q2 or Q-median is often used as a defining indicator. Our Qm indicates that half of our membership is 25% along the path to being an accomplished amateur. It can be a guide to speakers to condition their talks so as to avoid being too deeply technical in the early portions of their presentation.

"I LIKE"

7	Food
6	Helpful members
5	Friendly
3	Novice Pgrm
3	Observing
3	Great People
3	Star Parties (regular & awesome)
3	Good speakers
2	Knowledge sharing
2	Topics & Info Available
1	Kind to Newbies
1	Very Active
1	Resources
1	AL Membership
1	Newsletter
1	Variety of Interests
1	Location
1	Novice & Meetings
1	Outreach Activity
1	Learn Heavens
1	Assets of Club
1	Loaner Pgrm
1	What's UP

"I WISH"

1	A handout for strangers
1	Different Color T-shirts
1	Improve the Program
1	A "Useful Tool" Program where members describe a useful tool or book, etc they use
1	Increase membership
1	Increase involvement from general membership
1	More technical info about stars, planets, moon
1	Advertise – People don't realize we're here
1	Do more observing

"NEEDS IMPROVEMENT"

2	Darksites
2	Program of interest
1	More interaction between old & new members
1	Food run-out
1	Prefers pizza vs sandwich
1	Overly technical main programs
1	Publicity for Club Pics for newspapers
1	Buy own darksite
1	More People in Meetings
1	Membership
1	Scientific Lectures
1	Coordinate Speakers more in advance
1	More interaction with club business

December Member Survey - page 3

"WANT TO LEARN"

3 Astrophotography
1 More about observing & Outreach
1 Telescope and mount mechanics
1 Set up / Take down Telescopes for beginners
1 What device to use when & where
1 Everything about Observing
1 How to use common computer interfaces in the field
1 More about Solar Astronomy & beginning of universe

SPEAKER TOPICS

(an open question without prompts or multiple choice)

Observing Tips
Tips/tricks-beginner Stargazing
Helpful Hardware/Software
ALCOR Certificates Available
Astrophotography
The Sun
Andromeda
Future of Astronomy
Sky History
White Elephant Show & Tell
Chemistry in Space
New Equipment in Space
Space Telescopes
Space Station Updates
Space Aliens Update
Mars Mission Update
History of Telescopes
Home made Telescope Process

MEMBER INTEREST TOPICS – MULTIPLE CHOICE

(of 44 categories, members were asked to pick no more than 15 Selections of less than 5 excluded except as relate to another category)

14 Astro Photography
14 Nebulae, Galaxies, Clusters
12 Origins of Universe
  8 Nature of Universe
  6 History of Universe
12 Black Holes
11 NASA and Others Space Programs Underway
 9 Astronomy Theory and Speculation
 9 Plan a Trip to a Major Star Party
 9 Radio Astronomy
 9 Planetary Astronomy
 8 Telescope Mechanics & Telescope Making & Grinding Mirrors
  4 Telescopes & Equipment Reviews
  4 Guides to Buying a Telescope
  4 Telescope Do's and Don'ts
 8 Nuclear Astronomy & Chemistry of Universe
 7 Visual Observing
  3 Personal Vision & Astronomy
 6 Historic Astronomers & Events
 6 Orbital Mechanics
  5 Astro Navigation
 6 Stellar Magnitude
 6 Kuiper Belt & Oort Cloud
 5 Messier Catalog
 5 Plasma Cosmology
 5 Eclipse Studies
 5 Lunar Astronomy
 5 Sidewalk Astronomy
 4 "On-Line" Glimpses of Astronomy Sites

NHAC Monthly Star Parties

Come on out for Socializing and Stargazing!

Mark these dates on your calendar for future NHAC Star Parties at The White Eagle Lodge:

March 5, 2011
April 2, 2011
April 30, 2011
May 7, 2011
June 4, 2011
July 2, 2011
July 30, 2011
August 27, 2011
September 24, 2011
October 22, 2011
November 26, 2011
December 17, 2011

**These dates are tentative and subject to change.*

Rules and Directions are available online at www.astronomyclub.org

Tips For New Observers

by Sue Wheatley

The Day Before

- Set up your equipment in your living room in the daylight. Put the whole scope together just like it will be in the field. (Knowing the finderscope slides into a socket is different from actually sliding it in.)
- Decide what size table you need. TV tray? Upside-down cardboard box? You don't want your stuff in the grass.
- Get a box with dividers like a tackle box. ALWAYS put the pieces of your equipment in the same spot in the box. You want to put your hand right on whatever you want without rummaging around.
- Create a checklist: chair, table, pencils, books, brimless hat (brims and eyepieces don't play well together), coffee mug, planisphere, etc. Keep a copy of your checklist in the box. Choose your clothes carefully. You'll need pockets, and it will get colder than you think.
- Plan your observing! You don't want to waste time at the site saying, "What shall I look at tonight?" If you group your observations by constellations, you won't spend all your time moving your scope. Choose a constellation in the east, another in the south, another in the north because you won't know which part of the sky will be the best. Since everything ends up in the west, you don't need a western constellation.
- Check what time the sun goes down; get to the site early enough to avoid fire ants and tripping hazards.

Fallacy#1: Get everything in black. White destroys your night vision. White light, yes, but who wants to grope around on the ground looking for a black pen? Got a black pen you love? Paint a white stripe on it so you can find it in the grass. A white stripe on tripod legs keeps you from tripping over them. Get some white on any black chair legs too. (White nail polish, opaque, works great.)

At The Observing Site

- Get the finderscope on the telescope. Find a point (the tip of a telephone pole about a mile away is perfect, but a distinctive tree branch is OK) in the big scope, adjust the finderscope to see the same thing...not the other way around.
- Ladies: Wipe the mascara off the eyelashes. Ladies and Gentlemen: Clean your glasses.
- Shorten or lengthen your scope's tripod legs so you don't have to stand on your head to see the east, north and south constellations you have chosen. Your general goal is to be holding your head almost straight, not tilted up or down. Humans are more comfortable holding their heads straight, and they can hold that position longer so they can study the object, and because "floaters" in the eyeball go down (gravity). You want floaters down at the bottom of your eyeball, not near your lens or retina.
- Skip any object you have to stand on your head to see. Go back to it a half hour later, when you can see it using a more comfortable position.
- Pick an easy object to start. Something you can see naked-eye. Use it to tweak your scope...focus, eyepiece magnification, etc.

During Observing

- Develop rules for yourself: “The 32mm eyepiece goes in my left pant pocket.” “ The pencil goes in my right vest pocket.”
- Never skimp on filling out an observing form. Who wants to go home and have to remember if it was 10:30 or 10:50? Or next week will you remember you used a 24 mm eyepiece?

Fallacy#2: Use only red flashlights. You will need a white flashlight when you pack up your stuff to go home. Thermos bottles, chairs, coats, etc. have all been left behind. Just sing out if you are going to turn on a white flashlight. Then WAIT ten seconds to hear if anyone objects!

Binocular Only Users

Even if you are going out to observe with only binoculars and a chair, try these tips. Nothing will drive you home faster than no place to put your binoculars, or balancing your coffee cup in a wad of grass instead of on a table. A chair that cuts the circulation off in the back of your legs will ruin a night too.

Where do Spectral Lines Come From?

By: Aaron Clevenson, VP Education

One of the features that you study when you measure the spectrum of a star is its bright and dark spectral lines. Dark lines mean missing photons of a specific frequency. Bright lines mean extra photons of a specific frequency. But where do spectral lines come from? Dark spectral lines are called Absorption Lines. They are caused by light be absorbed when light in a continuous spectrum passes through dust and gas and some of the photons are absorbed. Bright spectral lines are called Emission Lines and are caused by an excited thin gas.

A hot solid, liquid, or dense gas emits a Continuous Spectrum. This means there is no missing light, and no extra light. From violet to red, the amount of light at any one frequency falls on a nice smooth curve.

But when that light is from an energized thin gas (like what is often found in space), the photons in the material (let's say hydrogen) get excited, they move from their ground state to an excited state. When they move back towards the ground state they emit photons. These photons create the bright lines that we see.

The dark lines are part of this same process. Light from our star enters a dust and gas cloud. Some of the photons, with just the right amount of energy will hit electrons and move them to an excited state. Those photon frequencies are now missing. Although they are usually re-emitted almost immediately, it is in a random direction, not in the same direction as the original light. Other observers would see them, but for us, they appear as dark lines.

The laws describing this spectral behavior are called Kirchhoff's Laws.

Examples of this can be seen in Nebulae. The pinkish ones (Orion Nebula, the Flame Nebula, etc.) are Emission Nebulae and are emitting light from hydrogen atoms that are excited by a nearby star. The bluish nebulae are Reflection Nebulae (like those found near the Pleiades) and are just reflecting the blue starlight of nearby stars (similar to why the sky is blue). It is called Rayleigh Scattering.

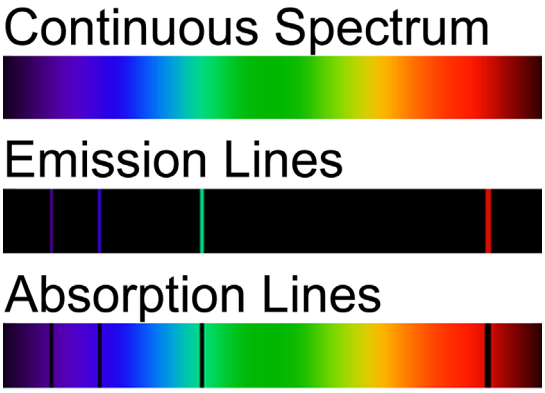


Image credit: http://astro.unl.edu

If you have any questions that you would like answered, please send me an email, to: **aaron@clevenson.org** and I'll see what I can do.

The Administaff Observatory at Humble ISD

The Administaff Observatory at Humble ISD, 2505 S. Houston Ave., Humble, TX 77396 281-641-STAR

Upcoming Public Nights at the Observatory*

March 11, 2011 @ 6:30 pm
April 8, 2011 @ 7:45 pm
May 13, 2011 @ 8:15 pm
June 10, 2011 @ 8:30 pm

**Dates and times are subject to change.*

Herschel Measures Dark Matter for Star-Forming Galaxies

February 16, 2011

PASADENA, Calif. -- The Herschel Space Observatory has revealed how much dark matter it takes to form a new galaxy bursting with stars. Herschel is a European Space Agency cornerstone mission supported with important NASA contributions.

The findings are a key step in understanding how dark matter, an invisible substance permeating our universe, contributed to the birth of massive galaxies in the early universe.

"If you start with too little dark matter, then a developing galaxy would peter out," said astronomer Asantha Cooray of the University of California, Irvine. He is the principal investigator of new research appearing in the journal Nature, online on Feb. 16 and in the Feb. 24 print edition. "If you have too much, then gas doesn't cool efficiently to form one large galaxy, and you end up with lots of smaller galaxies. But if you have the just the right amount of dark matter, then a galaxy bursting with stars will pop out."

The right amount of dark matter turns out to be a mass equivalent to 300 billion of our suns.

Herschel launched into space in May 2009. The mission's large, 3.5-meter (11.5-foot) telescope detects longer-wavelength infrared light from a host of objects, ranging from asteroids and planets in our own solar system to faraway galaxies.

"This remarkable discovery shows that early galaxies go through periods of star formation much more vigorous than in our present-day Milky Way," said William Danchi, Herschel program scientist at NASA Headquarters in Washington. "It showcases the importance of infrared astronomy, enabling us to peer behind veils of interstellar dust to see stars in their infancy."

Cooray and colleagues used the telescope to measure infrared light from massive, star-forming galaxies located 10 to 11 billion light-years away. Astronomers think these and other galaxies formed inside clumps of dark matter, similar to chicks incubating in eggs.

Giant clumps of dark matter act like gravitational wells that collect the gas and dust needed for making galaxies. When a mixture of gas and dust falls into a well, it condenses and cools, allowing new stars to form. Eventually enough stars form, and a galaxy is born.

Herschel was able to uncover more about how this galaxy-making process works by mapping the infrared light from collections of very distant, massive star-forming galaxies. This pattern of light, called the cosmic infrared background, is like a web that spreads across the sky. Because Herschel can survey large areas quickly with high resolution, it was able to create the first detailed maps of the cosmic infrared background.

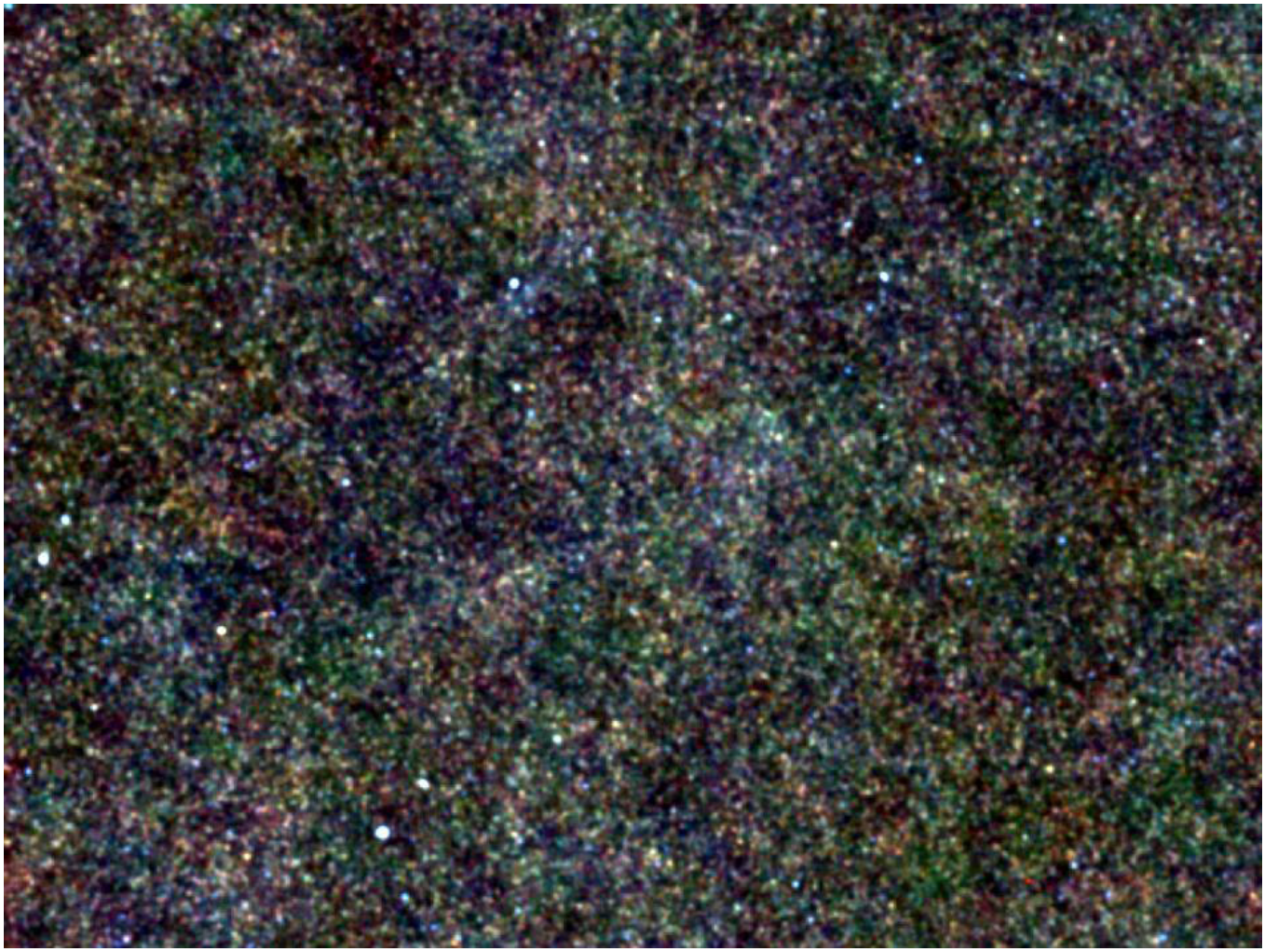
"It turns out that it's much more effective to look at these patterns rather than the individual galaxies," said Jamie Bock of NASA's Jet Propulsion Laboratory in Pasadena, Calif. Bock is the U.S. principal investigator for Herschel's Spectral and Photometric Imaging Receiver instrument used to make the maps. "This is like looking at a picture in a magazine from a reading distance. You don't notice the individual dots, but you see the big picture. Herschel gives us the big picture of these distant galaxies, showing the influence of dark matter."

The maps showed the galaxies are more clustered into groups than previously believed. The amount of galaxy clustering depends on the amount of dark matter. After a series of complicated numerical simulations, the astronomers were able to determine exactly how much dark matter is needed to form a single star-forming galaxy.

"This measurement is important, because we are homing in on the very basic ingredients in galaxy formation," said Alexandre Amblard of UC Irvine, first author of the Nature paper. "In this case, the ingredient, dark matter, happens to be an exotic substance that we still have much to learn about."

NASA's Herschel Project Office is based at JPL, which contributed mission-enabling technology for two of Herschel's three science instruments. The NASA Herschel Science Center, part of the Infrared Processing and Analysis Center at the California Institute of Technology in Pasadena, supports the U.S. astronomical community. JPL is managed by Caltech.

More information is online at http://www.herschel.caltech.edu, http://www.nasa.gov/herschel and http://www.esa.int/SPECIALS/Herschel/index.html.



A region of the sky called the "Lockman Hole," located in the constellation of Ursa Major, is one of the areas surveyed in infrared light by the Herschel Space Observatory. All of the little dots in this picture are distant galaxies. *Image credit: ESA/Herschel/SPIRE/HerMES*

Refreshment Committee Chairman Needed

Your hungry club members need YOU! Yes, YOU!!

Have you been thinking about getting more involved with the club, but weren't quite sure what to do? Well, this would be a great way to help out! We are looking for someone to be in charge of the meeting refreshments each month.

Your job would be to see that the refreshments are ordered, picked up and delivered to he meeting each month. They would need to be set up prior to the meeting and taken down after the meeting. You would also need to see that all of the necessary utensils were kept on hand.

As Chairman, you may choose to delegate this monthly, or handle it yourself with a few bodyguards. :)

Position: Availabile immediately

Salary: We will pay you on Tuesday for the hamburger today

Satisfaction: Priceless

Contact board@astronomy.club.org

We need YOU!!

Step on up!!

About NHAC

The North Houston Astronomy Club (NHAC), was formed for educational and scientific purposes, for people of all races, creeds, ethnic backgrounds and sex, for the primary purpose of developing and implementing programs designed to increase the awareness and knowledge of astronomy, especially for those living near the north side of Houston Texas.

NHAC is a non-profit organization dedicated to providing the opportunity for all individuals to pursue the science of astronomy, by observing in a dark-sky site, learning the latest technology, and sharing their knowledge and experience. Thus, our "Observe-Learn-Share" motto.

North Houston Astronomy Club is Sponsored by:

Membership Benefits

- Loaner telescopes
- Borrow from the NHAC "Library"
- Observe from Dark Sky Observing Sites
- Learn from experienced amateur astronomers
- Share your knowledge at club hosted picnics and star parties
- Discount magazine subscriptions (contact our Treasurer)
- Includes membership in the Astronomical League
- The quarterly Astronomical League magazine "Reflector"
- Eligibility for NHAC Executive Board

www.astronomyclub.org
www.nhac.info

North Houston Astronomy Club

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Observe - Learn - Share