



**DECEMBER 2020**

**Volume XX Number 12**

***OBSERVE - LEARN - SHARE***

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**UPCOMING EVENTS**

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- Dec 11**
  - General Meeting (Zoom)**
- Dec 12 and 13**
  - NHAC Star Party @ O'Brien Site**
- Jan 16 (tentative)**
  - NHAC Star Party @ O'Brien Site**
- Jan 22**
  - General Meeting (Zoom)**

# MONTHLY MEETING

The General Meeting (Zoom) will be at 7 P.M. on Friday, December 11. There will not be a Novice Meeting in November. Please check your email and the [NHAC Website](#) for further details and updates.

The speaker for our December meeting will be **Dr. Renee James**, Professor in the Department of Physics at Sam Houston State University. Dr. James' topic will be "BOOM! (some of) The Most Powerful Cosmic Events Since the Big Bang." This presentation will be based on a book Dr. James is currently writing.

Following is Dr. James' SHSU faculty profile:

*Dr. C. Renee James has been part of the SHSU physics faculty since 1999. Her primary classroom duty is teaching introductory astronomy for non-science majors, something that she does with great enthusiasm. She has twice been nominated for the University's Excellence in Teaching Award, and her unique teaching methods earned her a Gold Star award from NASA's IGES for inspiring uses of Hubble in Education. Every other summer she and Dr. Scott Miller (Department of Physics) lead an introductory class to Arizona and Australia to experience the astronomical events they would otherwise only read about (The next class is scheduled for Summer I 2014).*

*Trained as a stellar spectroscopist at the astronomy department of the University of Texas at Austin, she later switched gears from determining the chemical abundances of metal-poor stars in favor of exploring interesting connections in astronomy and the history of science. She has written extensively for both *Astronomy and Sky* and *Telescope* magazines ("What Has Astronomy Done for You Lately?"), and was awarded the Popular Science Writing Award by the Solar Physics Division of the American Astronomical Society. She recently authored "Seven Wonders of the Universe That You Probably Took for Granted" (The Johns Hopkins University Press, 2010), and is currently working on a book about the surprising life-changing results of seemingly impractical pure science research.*

*Recently Dr. James was awarded a grant from NASA to work with Dr. Miller and Dr. Andrea Foster from the College of Education to create a workshop to train regional secondary teachers in the nature of astronomical research.*

# CLUB NEWS

## 2021 NHAC Board Elections

Every December, Club members elect the NHAC Executive Board for the coming year. All members in good standing, with six months or more current membership, may run for office. In the event that no Candidates step forward, the Club Nominating Committee provides input.

The proposed Executive Board for 2021 is:

President - Bruce Pollard (current Vice President)  
 Vice President – Robert Brayton  
 Secretary - Rusty Hill (incumbent)  
 Treasurer – Joana Tan Gramajo (incumbent)  
 Astronomical League Coordinator – Aaron Clevenson (incumbent)  
 Membership Chair – Hagen Miller (incumbent)  
 Program Chair – Susan Pollard  
 Observation Chair – James Billings (incumbent)  
 Webmaster – Jamie Martin  
 Newsletter – Open

Be sure to attend (via Zoom) the December General Meeting to cast your vote.

We welcome news, photos, comments and contributions for the newsletter. Please send them to [newsletter@astronomyclub.org](mailto:newsletter@astronomyclub.org) by the 10th of each month.

## NHAC Outreach

The calendar at the [NHAC Website](#) shows dates and information about planned outreach events. These are generally held outdoors and are weather dependent. These events are good opportunities for Club members to introduce visitors to the wonders in the sky. Typically, one or more Club members assist at each event. Watch for emails from Aaron Clevenson to announce the events and please help out when you can!

## Astronomical League

The North Houston Astronomy Club has been an affiliate of the Astronomical League since the Club's inception in 1999. NHAC members are automatically enrolled in the League and can participate in the League's observing programs according to their time and interests. Currently there are 72 observing programs, with more being added all the time.

Aaron Clevenson serves as the NHAC Astronomical League Coordinator. He can be contacted at [aaron@clevenson.org](mailto:aaron@clevenson.org).

The latest issue of "What's Up, Doc" by Aaron Clevenson is at [What's Up, Doc?](#)

# GALLERY



## Image by Aaron Linderbaum

This image of M45 was captured on Nov. 23 from my driveway through some significant light pollution from nearby street and parking lights. My newly acquired Optolong L-Pro filter provided noticeable improvement in reducing light pollution, making post processing a little less challenging. Utilizing the Altair Hypercam 269c, I took 20 subs at 180s, incorporating all necessary calibration frames. PHD2 guided the Altair GP 130mm guide camera on my Advance VX mount. Processing was done using Startools followed by touch ups in GIMP.

## Image by Val Ricks

Of course, there is a reason this cluster is called the Christmas Tree Cluster, NGC 2264. The nebula behind it might be called the Christmas Tree Nebula as well. The brighter parts of the nebula have the shape of a Christmas tree, probably as a result of radiation from cluster stars. Just above the top of the tree is the Cone Nebula. At the bottom left is a complicated web of gas often called the Fox Fur Nebula.

This image is, of course, dressed up in Christmas colors (actually, the image is a monochrome image taken through a narrow slice of the deep red part of the spectrum). Merry Christmas, everyone!



# THE GREAT 2020 CONJUNCTION OF JUPITER AND SATURN

**By Luis Munoz**

*Author's note: This article was compiled from EarthSky website, Sky at Night magazine website and NASA website.*

Jupiter and Saturn are getting closer and closer (as viewed from Earth), as they near their great conjunction on December 21, 2020. At their closest, they'll be only 0.1 degrees apart. That's just 1/5 of a full moon diameter. You will not be able to tell the two planets apart without the aid of a telescope or perhaps binoculars.

Coincidentally, December 21 also happens to be the date of the December solstice.

Saturn and Jupiter appear to pass close to each other, as seen from Earth, every 20 years (actually every 19.85 years), and when they do, we call it a 'great conjunction'. Jupiter and Saturn won't really be close to each other at all. In fact, on that date Saturn will be about twice as far from Earth as Jupiter will be. However, our line of sight from Earth will suggest otherwise, as we all get to witness (clear skies allowing) the closest planetary conjunction of Jupiter and Saturn that most of us are ever going to see.

In astronomy, we use the word 'conjunction' to describe meetings of planets and other objects on our sky's dome. The term "great conjunction" is used to describe meetings of the two biggest planets in our solar system, mighty Jupiter and the awesome ringed Saturn.

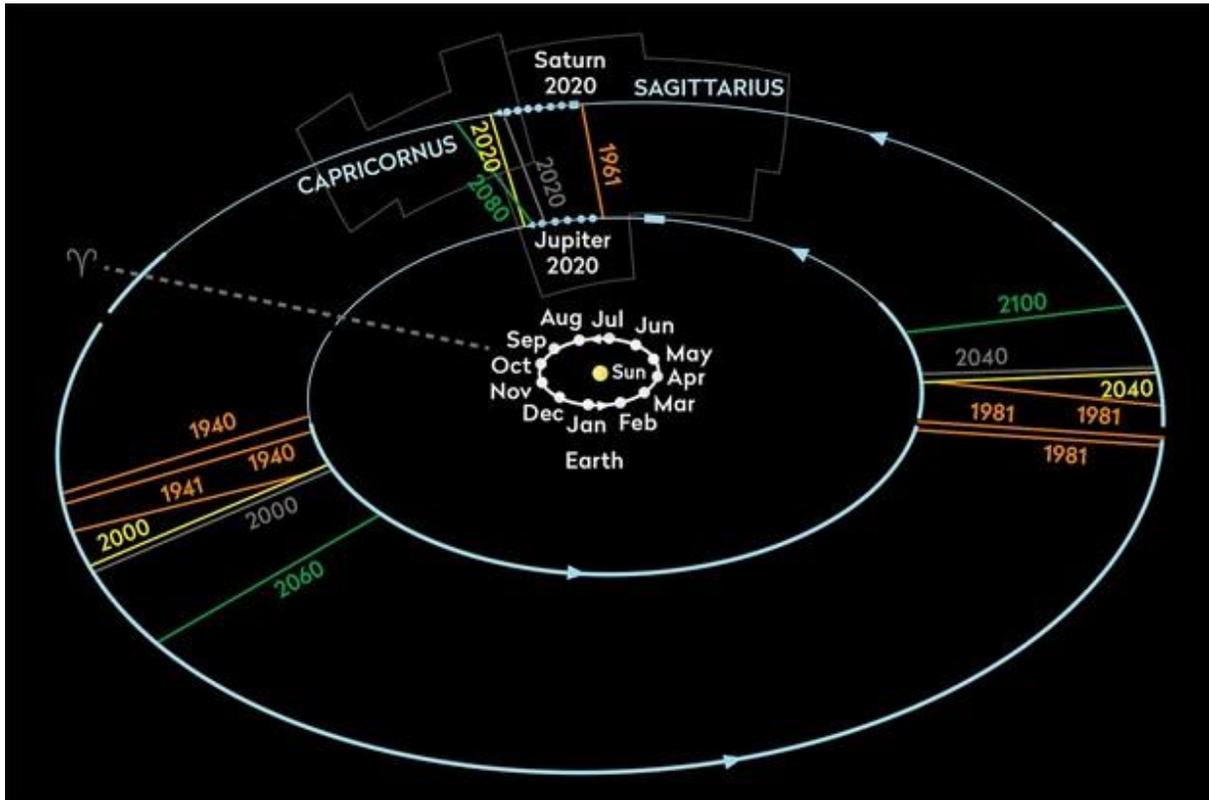
It'll be the first Jupiter-Saturn conjunction since the year 2000, and the *closest* Jupiter-Saturn conjunction since 1623 (397 years ago!), only 14 years after Galileo made his first telescope. However, that conjunction was only 13 degrees east of the sun (closely following the sun at sunset), and it is unlikely that it was noticed by many.

The closest *observable* Jupiter-Saturn conjunction before that was way back in medieval times, in 1226!

## **What causes a great conjunction?**

What actually happens during a 'great conjunction' is Jupiter catching-up on, and overtaking, slower moving Saturn. Jupiter takes 11.86 years to orbit the Sun and Saturn takes 29.4 years and every 19.85 years they seem to pass each other in the night sky.

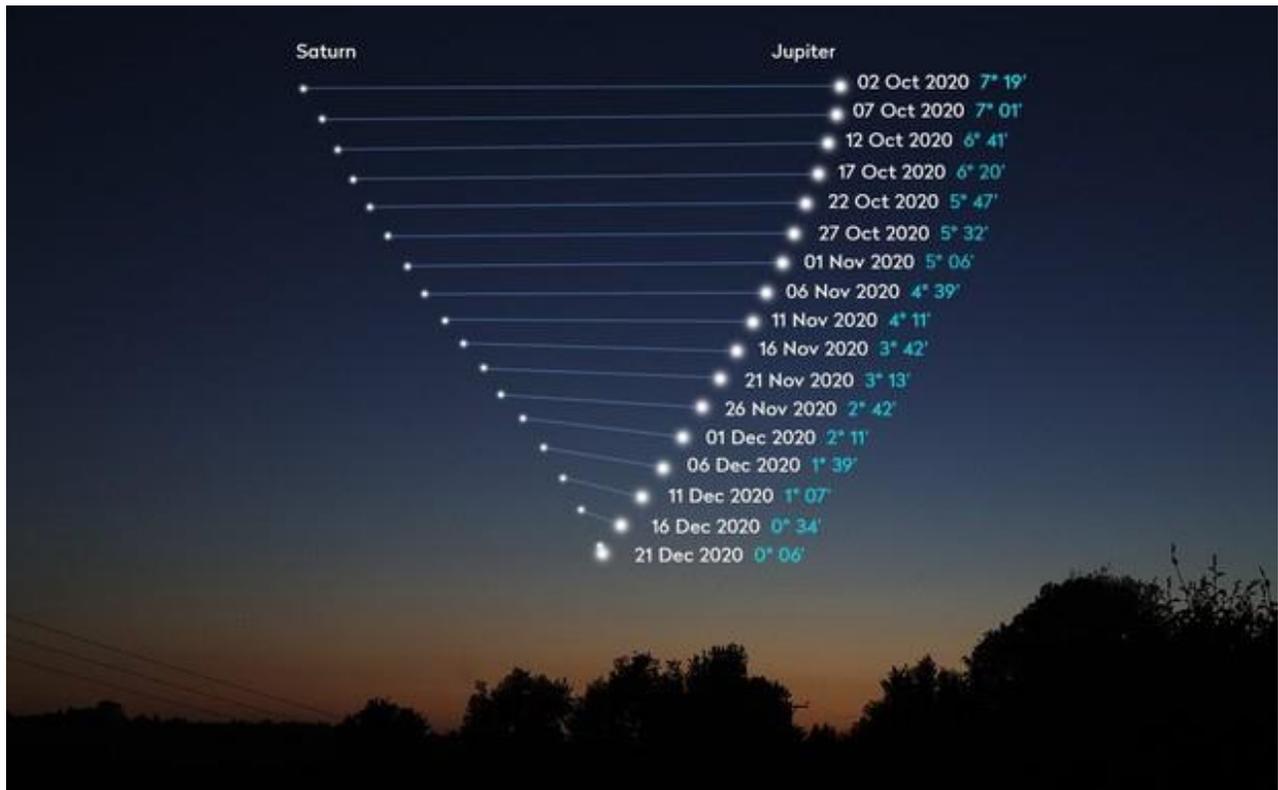
Each successive 'great conjunction' takes place around 117 degrees apart in the sky. The planets' orbital resonance is such that each conjunction returns to the same part of the sky roughly every 800 years.



Jupiter meets Saturn about every 20 years. Conjunctions of the two are around two-thirds of the way along their orbits from the previous encounter. Credit: Pete Lawrence

Even though the moment of closest conjunction is the highlight, try observing the narrowing separation of Jupiter and Saturn in the weeks before December 21.

They will begin the month 2.1 degrees apart, narrowing to 0.1 degree on December 21, and as Jupiter overtakes Saturn, they'll end 2020 around 1 degree apart. So, for much of the month they will appear to be very, very close.



Saturn and Jupiter appear to close in on each other as the Great Conjunction 2020 approaches on December 21 (apparent distance given in degrees and arcminutes).  
Credit: Pete Lawrence

The next extra-close Jupiter-Saturn conjunction like this one of 2020 won't be occurring again until the Jupiter-Saturn conjunction of March 15, 2080.

But don't wait to start watching. They're visible tonight and every night (clear skies permitting) – near each other for the rest of 2020 – an appealing and mind-expanding sight!

# DECEMBER STAR PARTY

**By Rusty Hill**

## ***Star Party – Saturday – December 12, 2020***

Hi, Folks. If the weather holds as forecast, we may actually have a decent evening for a change. There is supposed to be a medium cold front coming through Friday night, with not a lot of rain, and clearing skies Saturday afternoon. Saturday evening is supposed to be mainly clear skies. We shall see!

Sunset will be at 5:23 P.M. with a waning moon rising at 7:00 A.M. So, the moon will be no factor. It will be a dark night.

Weather permitting, there will be a meteor shower visible most of the evening, and peaking possibly around 1:00 on Sunday morning. These are the Geminids, which in recent years have been the most numerous of the periodic meteor showers, surpassing even the Perseids of the summer. We are 24 hours early for the peak, but should be able to see quite a few, with possibly the occasional meteor appearing not too long after sunset Saturday evening. The full peak of the shower will be early in the morning on Monday, but early Saturday evening and early Sunday morning should be rewarding.

The radiant of this shower is near Castor, in Gemini, which will be rising in the Northeast. Gemini will be well up in the Northeastern sky well before midnight.

Sky and Telescope magazine has an excellent article on viewing the Geminids in their December issue starting on page 14.

If you do plan to “stay up late” on Saturday to try to catch a few of the meteors, please do remember to:

1. Wear warm clothes! The low temperature on Sunday morning will be in the low 40° range, so it will be a lot colder than when you dressed and packed your gear during the daylight on Saturday afternoon. A perfect arrangement would be a lawn lounger and a bedroll.
2. Do not think that “something medicinal” in a small bottle in your pocket will help you stay warm. It just doesn’t work. A thermos of hot tea or coffee works very well.
3. Bring a cell phone, maybe two if you have them, and make sure they are well charged. Make sure someone knows where you are and when you will be coming home.
4. A full tank of gas is always a good idea.
5. Always think “Safety”. I do harp on this, I know.

The “parade of (easily seen) planets” is about done, but you can still see Jupiter and Saturn about 12 or 15° in the Southeast for a while after sunset. Mars will be easily identified high in the East, almost directly overhead. Venus will not be rising until about 6:30 A.M.

This will be the last Star Party this winter where we can expect to see Jupiter, Saturn, Mars, the Andromeda Galaxy, and the Orion Nebula, M42, in the same evening, with the added attraction of a decent meteor shower. It should be a good evening, if the weather forecast holds up.

If anyone who has not been to the O’Brien Dark Site plans to come out and would like to drive in with someone else, please let me know ahead of time and I will meet you at the Convenience Store/Gas Station at the Stoplight on Highway 105 in Dobbin. Please phone me ahead of time to let me know to expect you. My cell phone number is 210-862-5478. I plan to leave the Convenience Store no later than 5:00 P.M. to allow plenty of time for first-timers to familiarize themselves and everyone to set up.

Plan to use masks and honor Social Distancing.

See you Saturday,

Rusty

***P.S.***

On Sunday Dec. 13, we are having a special event Meteor Party at the O’Brien Dark Site for any who wish to observe the Geminid Meteor Shower. The weather should be ideal.

If you go, please do be careful about the Safety precautions.

I will be observing from a site near Waco. I plan to do a one-hour count from 12:30 till 1:30. For comparison my highest previous 1-hour count was 75 Meteors observed during the Perseids in 2016 near Kerrville.

I would be curious about any totals observed during the same time period from the O’Brien Dark Site.

## DARK SITE INFORMATION

If you are new to the club, Star Parties are especially for you. We, the members, are the reason we have observing Star Parties, and they are great occasions to get familiar with observing. We have 10" Dobsonian telescopes available at the Dark Site for your use. There will also be several other scopes available for all to try. And do bring a Binocular-- you can do lots of successful observing with nothing more.

NHAC Club Policy is that the focus of the Star Parties will be to give as much assistance as possible to new observers. For those who may not have been to the O'Brien Dark Site, it is just north of Dobbin, which is on Highway 105 west of Montgomery. It has reasonably dark skies and a great low horizon in all directions. The Owners, Tim and Wanda O'Brien, are very generous hosts, and they do turn off any outside lights which might bother us, if we remember to ask.

**The specific Dark Site location is password protected. Any club officer can give you the password, but it is NOT FOR THE GENERAL PUBLIC!**

Access to the Dark Site must be requested from the O'Brien's in advance via the NHAC email. It is only necessary for any 1 member to request access... Access approved for any of us is access approved for all of us.

On our NHAC web site, click on "Observing" then select "O'Brien Dark Site". Scroll down to the O'Brien Dark Site information and look for the "detailed directions" link. You will need to enter the password. There are maps as well as directions. It is well worth the drive, which is about 6- or 7-minutes driving time north of Dobbin off of State Highway 105 west of Montgomery.

Star Parties are routinely scheduled for the Saturday on, just before, or just after the New Moon throughout the year. This is to provide the best opportunity for dark skies.

# INSPERITY OBSERVATORY



## Public Night at the Insperity Observatory – January 1, 2021

**Due to pandemic precautions, attendance is limited, by reservation only, and viewing will be video observations through the telescopes. Watch for emails with reservation announcements.**

The Observatory has a 6" Takahashi refractor, a 16" Meade Schmidt-Cassegrain, and a 20" Plane Wave telescope. Each is computer controlled, and provides an awesome view of the sky. This can be a great opportunity to see a new or favorite object in a large telescope.

The Observatory is about 3/4 of a mile south of Will Clayton Parkway on S. Houston Ave, just north of Rankin Road in Humble, in the back part of the Jack Fields Elementary School on the East side of S. Houston Ave. The address is:

Jack Fields Elementary School  
2505 S. Houston Ave.  
Humble, TX 77396

For more information, the Observatory phone number is 281-641-STAR and the web site is <https://www.humbleisd.net/observatory>. Dates and times are subject to change.

## ABOUT NHAC

The North Houston Astronomy Club (NHAC) is a not-for-profit organization established in 1999 for educational and scientific purposes, for people of all races, creeds, ethnic backgrounds and sex. Our primary purpose is to develop and implement programs to increase the awareness and knowledge of astronomy, especially for those living near the north side of Houston, Texas.

NHAC is dedicated to providing an opportunity for people to pursue the science of astronomy, to observe in a dark-sky site, to learn the latest technology, and to share their knowledge and experience, thus our "Observe-Learn-Share" motto.

Public meetings are normally held each month on the fourth Friday. In the months of October, November and December they are usually rescheduled for the third Friday of each month, so as to not conflict with the Annual All Clubs meeting, Thanksgiving, or Christmas.

The benefits for membership include:

- Loaner telescopes after being a member for 6 months.
- Opportunity to observe from dark sky observing sites.
- Learn from experienced observers.
- Astronomy Magazine subscriptions at a discount.
- Astronomical League membership, with its many observing programs.
- Subscription to the Astronomical League magazine "Reflector".
- Access to the NHAC library
- Discounts on purchases at Land, Sea and Sky. Be sure to identify yourself as an NHAC member.

More information at the [NHAC Website](#)

Check out our [Facebook page](#).

Our mailing address is:

North Houston Astronomy Club  
Post Office Box 5043  
Kingwood, TX 77335-5043

NHAC is sponsored by:



# CALENDAR. MEMBERSHIP. OFFICERS

| <b>NHAC General Calendar</b>  |                         |               |                 |
|---|-------------------------|---------------|-----------------|
|   | Executive Board Meeting | Star Party    | Monthly Meeting |
| December 2020   |                         | Dec 12 and 13 | Dec 11          |
| January 2021  |                         |               | Jan 22          |
| Dates and times are subject to change. Star parties are weather permitting. |                         |               |                 |

### Membership

Memberships run from January 1 through December 31.

Full year dues are:  
 Students \$10  
 Individuals \$30  
 Family Groups \$40

Membership applications and dues payments can be made at the NHAC website at:  
[NHAC Website](#)

### 2020 NHAC Executive Board

|                                 |   |
|---------------------------------|---|
| President                       | Carlos Gramajo - <a href="#">email</a>          |
| Vice-President                  | Bruce Pollard - <a href="#">email</a>           |
| Secretary                       | Rusty Hill - <a href="#">email</a>              |
| Treasurer                       | Joana Tan - <a href="#">email</a>               |
| Newsletter Editor               | Jesse Roberts - <a href="#">email</a>           |
| Astronomical League Coordinator | Aaron Clevenson - <a href="#">email</a>         |
| Webmaster                       | Bruce Pollard (interim) - <a href="#">email</a> |
| Observation Chair               | James Billings - <a href="#">email</a>          |
| Membership Chair                | Hagen Miller - <a href="#">email</a>            |
| Program Chair                   | Trevor Arnold - <a href="#">email</a>           |

# AFFILIATIONS

NHAC is a member of:



**The Astronomical League**

<https://www.astroleague.org/>



**Night Sky Network**

<https://nightsky.jpl.nasa.gov/>



INTERNATIONAL DARK-SKY ASSOCIATION

**International Dark Sky Association**

<https://www.darksky.org/>