New Braunfels Astronomy Club

March 17th, 2022
Meeting 270

Agenda

- Open meeting and introduce new members (get names, email)
- Old Club Business: Club organization
- New Club Business (events, outreach): Astronomical League membership & Library Telescope Program, Astronomy Night at TPML, March star party at Dots?
- Interesting observations, experiences: Trip to McDonald Observatory report
- Show and tell:
- What’s in our sky this month? Newsletter + member input
- Main feature(s):
- Discussion, feedback and close the meeting

Notes:

Coming up: OUR 271st ASTRONOMY CLUB MEETING
April 21st, 2022, from 6 - 8 pm     Bosses Pizza on Loop 337

astronomynbtx.org  Email: info@astronomynbtx.org
Astronomy Friends New Braunfels..........  facebook.com/groups/354953995432792/
Comal County Friends of the Night Sky......  facebook.com/groups/166098014710276/
comaldarksky.org/  Email: info@comaldarksky.org
New Braunfels Astronomy Club

Because It’s Out There

NBAC’s 25th Year!

NBAC Observing Calendar
My Celestial Pick
Astrophotography
Watch the ISS
Solar System Happenings

Lagniappe

Cover Story> Brown Dwarfs

Larry’s Celestial Calendar & Newsletter

by Eric Erickson

296th Edition
Volume 25, Number 3
March 17th to April 21st, 2022

NASA/JPL
**NBAC OBSERVING CALENDAR**

<table>
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<tr>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
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<td><strong>Mar 17</strong></td>
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<td></td>
<td></td>
<td><strong>New Moon - no foolin!</strong></td>
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<td><strong>Mar 17</strong></td>
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Solar System Happenings

Mercury is a morning planet in March. Catch it before sunrise as it joins with Venus, Mars, Saturn, and the Moon at various times. On April 2nd it is in superior conjunction with the Sun. Mercury then arrives in the western sky just before sunset starting April 9th. It gets better in the following weeks and on April 17th it gets within 2° of Uranus.

Venus is a morning planet, shining brilliantly in the east before sunrise. It joins with other planets and the Moon. It is waning in size and about 50% illuminated.

Earth still spins, and we are still here to marvel at it all.

Zodiacal Light: Toward the end of winter and into spring zodiacal light is visible in the western sky. Get away from outdoor lighting and tall trees. Look in the west after sunset for a triangle shaped glow coming from the horizon. Zodiacal light is sunlight reflected by interplanetary light along the ecliptic. In spring zodiacal light points into the Milky Way for a double pleasure and photo opp.

Best ISS viewing for New Braunfels (works for Canyon Lake too) -From Heavens Above

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<thead>
<tr>
<th>Date</th>
<th>Start Time</th>
<th>Start Loc</th>
<th>Max Alt °</th>
<th>End Loc</th>
<th>Note</th>
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<tbody>
<tr>
<td>03/17</td>
<td>20:50</td>
<td>ESE</td>
<td>26</td>
<td>NNE</td>
<td>Enters Earth’s shadow before making the horizon</td>
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<td>03/18</td>
<td>20:01</td>
<td>SW</td>
<td>49</td>
<td>NE</td>
<td></td>
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<tr>
<td>03/20</td>
<td>20:02</td>
<td>W</td>
<td>16</td>
<td>NNE</td>
<td>Moves along the horizon</td>
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<tr>
<td>04/20</td>
<td>06:21</td>
<td>SSW</td>
<td>36</td>
<td>NE</td>
<td>Skirts above Saturn, Mars, Venus, and Jupiter</td>
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<tr>
<td>04/21</td>
<td>05:34</td>
<td>SSE</td>
<td>18</td>
<td>ENE</td>
<td>Exits Earth’s shadow at 05:34. Slips below Saturn then above Mars, Venus and Jupiter.</td>
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The Moon dances with planets and stars

Mars is a morning planet, joining with Venus, Mars, Mercury, Saturn, and the Moon at various times. Jupiter joins the party in mid-April.
**Jupiter** is in conjunction with the Sun, returning as a morning planet in mid-April and forms the foundation of a nice pre-dawn 4 planet lineup on April 18th.

**Saturn** is low in the pre-dawn eastern sky variously with Venus, Mars, Mercury, and the Moon. On April 18th it gets in a lineup with Jupiter, Venus, and Mars.

**Uranus** is in southern Aries. At magnitude 5.8 it is catchable in binoculars. Look for a fairly bright greenish gray “star”. On April 17th it and Mercury are around 2° apart in the post-sunset western sky.

**Neptune** is in conjunction with the Sun.

**Comet(s)**

- Periodic comet 19P/Borrelly was discovered by French astronomer Alphonse Borrelly on December 28, 1904. Visually a challenge for 4” scopes, it should produce a nice image.

- C/2021 03 (PanSTARRS) comes on the scene for N. America on April 21st, but only in the southern states. Look for its core below Mercury just after sunset the night of our April meeting. Use binoculars or a telescope.
In-Between

My philosophic view of our universe is everything, really, everything that exists is on the spectrum of existence. I see existence as a smeared continuum vs. absolutes. An example is visible light. It’s part of the electromagnetic spectrum. Red light is part of the visible light spectrum. But is there an absolute red? We humans have an insatiable need to categorize and compartmentalize, so astronomers use 656.281 nanometers wavelength, called hydrogen-alpha (H-alpha) as a standard. H-alpha light comes from the phenomenon of hydrogen atoms emitting light at this wavelength after ionization and returning to their natural energy state. H-alpha light is abundant since hydrogen is the most abundant element in our universe. However, 656.281 nm defines one red among the infinite possible red wavelengths surrounding H-alpha.

The same goes for stuff like celestial bodies (rocks, planets, stars, etc.). They live on the continuum of existence, and we categorize/name them based on characteristics such as mass, chemical makeup, luminosity, temperature.

We define stars by their sustained ability to fuse hydrogen into helium. Never mind stars that have depleted their hydrogen and fuse helium or other, heavier elements – they were stars to begin with. Our Sun is called a yellow dwarf star. Why? It’s on the smallish side of the star size and mass spectrum and it produces a yellowish-white light. At 8% - 50% the Sun’s mass, red dwarf stars are the smallest and dimmest stars, hydrogen fusion perking along and producing reddish light.

An object with mass below 8% of our Sun’s mass (80 times Jupiter’s mass) cannot sustainably fuse hydrogen. Those whose mass is 70-80 times Jupiter’s might intermittently fuse deuterium. They’re not called stars. They are not called planets either. These objects are called brown dwarfs. They are in-betweeners. They live in an area of the existence spectrum between planets and stars. It’s a continuum. While Jupiter is cold in its clouds, -234 degrees F, objects greater than 8-10 times Jupiter’s mass are hot all the way through. An object 70 times Jupiter’s mass is hotter than a blast furnace and glows a dull red!

The process for a brown dwarf’s formation has not been nailed down. One hypothesis is that they form in the same scenario as stars, but without enough mass to fuse hydrogen. Another is they arise during planetary formation around a nascent star and escape or get flung out of the planetary system. We do know brown dwarfs with 13 to 70 times the mass of Jupiter have super-hot atmospheres, with titanium oxide, magnesium silicate and iron clouds. Without sustained fusion brown dwarfs will slowly cool over hundreds of millions of years and just go cold.

- Eric Erickson
My Celestial Pick: Auriga

The Charioteer sounds adventurous. Auriga can be an adventure in observing and astrophotography. Auriga is Latin for the charioteer and was included in Ptolomy’s original 48 constellations.

Auriga is central in many cultures but I will stick with the Greeks, they’re fun. In Greek mythology Auriga is variously identified with Erichthonius, credited with inventing the 4-horse chariot, or Myrtilus, son of Hermes and charioteer for King Oenomaus (wine man). In keeping with Greek mythology, there has to be drama.

King Oenomaus feared death by son-in-law as prophesied, so he killed every suiter of his daughter, eighteen in all, by luring them into a chariot race, defeating and killing each. Then, to make a point, he mounts each of their heads on the wooden columns of his palace. Along comes Pelops, son of king Tantalus, and gets his nerve up to ask for Oenomaus’ daughter’s hand in marriage. Doesn’t he see the 18 heads up on posts? Oenomaus challenges Pelops to a chariot race with the intent to kill him. Well, after some twists and turns and shenanigans by Pelops, it turns out badly for Oenomaus (death by would-be son-in-law) and Pelops gets the daughter!

A bit of trivia, this epic chariot race Oenomaus lost is credited for originating what would become the Olympic games. I wonder if shenanigans is supposed to be part of the games? Seems most everyone tries them.

Auriga is easy to spot, it looks like an elongated and misshapen pentagon with bright star Capella anchoring.

Capella is a quadruple star system consisting of two binary systems. Capella A (a & b) cannot be separated visually. They are very close to each other, the distance of Venus to the Sun and only separable via spectroscopic analysis. The other binary pair is observable and are called H & L. Don’t get excited, you will need around a 12” diameter scope or larger to separate them. And what about the other letters, B-G, I,J, and K? The Washington Double Star Catalogue lists stars in the Capella system up to R, but only Aa, Ab, H, & L are gravitationally associated in the Capella system. The others are “line of sight” companions, not associated but apparently close as they occupy the nearby sky. Check it out.
Imagining Imaging: Platform for club imagers...images and imagers needed!

Lagniappe

THE OTHER COAST

THE WEBB TELESCOPE THAT HAS BEEN LAUNCHED INTO SPACE WILL BE ABLE TO SEE FARTHER THAN ANY OTHER TELESCOPE.

"BESIDES PEERING INTO THE ORIGINS OF THE UNIVERSE, IT MAY EVEN SPOT HABITABLE PLANETS."

JUST THINK, SAKURA, ENTIRE NEW WORLDS WE COULD ONE DAY LIVE ON!

WILL THE TELESCOPE KNOW WHICH PLANETS ARE DOG-FRIENDLY?

UMM... I DON'T THINK SO.

THEN IT'S RUBBISH.