

New Braunfels Astronomy Club

Texas, USA

July 20th, 2017

219th Meeting

Larry's

Celestial Calendar & Newsletter

July 21st to August 17th, 2017

241st Edition

Get Ready to Umbra... or Penumbra
Black Holes...how Many Ways to Singularity?
Perseids are Washed by the Moon

Observer's Highlight Calendar for Clear Skies

Month Date Time Event

Month	Date	Time	Event
July	23	4:46 am CDT	New Moon
	24	Dusk	CHALLENGE! Look for a very thin crescent Moon 5° lower right of Mercury and Regulus.
	28	Dusk	Jupiter and a waxing crescent Moon are close, with Spica 8° left
	30	10:23 am CDT	First Quarter Moon
Aug	2	Evening	South; A waxing gibbous Moon is close to Saturn and Scorpius
	7	1:11 pm CDT	Full Moon
	11-13	After Midnight	Northeast; Perseid meteor shower peaks on the 12 th , but is washed out by a waning gibbous Moon.
	14	8:15 pm CDT	Last Quarter Moon
	16	2 am CDT	East-southeast; A waning crescent Moon is close to Aldebaran

Solar System Roundup

Comet Johnson (C/2015 V2)

Comet PANSTARRS (C/2015 ER61)

Comet Johnson is still visible but waning slightly at magnitude 7. It is in Hydra currently and on the 22nd will be about 3° east of Pi (π) Hydrae. It continues its southerly travels and gets difficult to spot as it enters Centaurus by July's end.

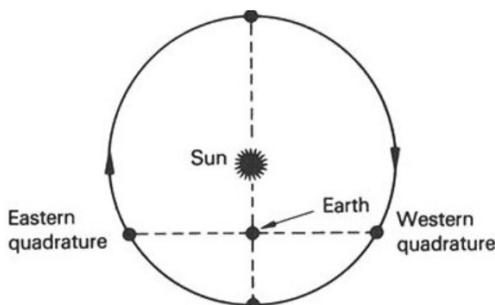
Comet PANSTARRS (C/2015 ER61) is in Aries, heading toward Taurus. At magnitude 9 it is tough for small optics. Starting on August 14th look for it less than 1° south of the Pleiades.

- ✚ **Mercury** isn't particularly good for viewing, low on the horizon.
- ✚ **Venus** is a morning "star", still brilliant but losing its shine a little. It's in Taurus.
- ✚ **Earth** still spins, and we are still here to marvel at the wonders of our universe.
- ✚ **The Moon** has volcanic hills. Check out Mons Rümker, a splotchy volcanic ring, on August 4th. It is in northern Oceanus Procellarum and will be on the terminator in early evening.
- ✚ **Mars** is not a good target.
- ✚ **Jupiter** rules the night now and is a fine target for telescopes and binoculars, especially big and powerful binoculars.
- ✚ **Saturn** is at opposition, and its rings are nicely tilted for a beautiful view.
- ✚ **Uranus** is rising late night, in Pices.
- ✚ **Neptune** can be viewed in Aquarius in pre-dawn mornings
- ✚ **Pluto** is in Sagittarius

What is it?

Quadrature

The position of a celestial body so that its elongation is perpendicular to the direction of the Sun.

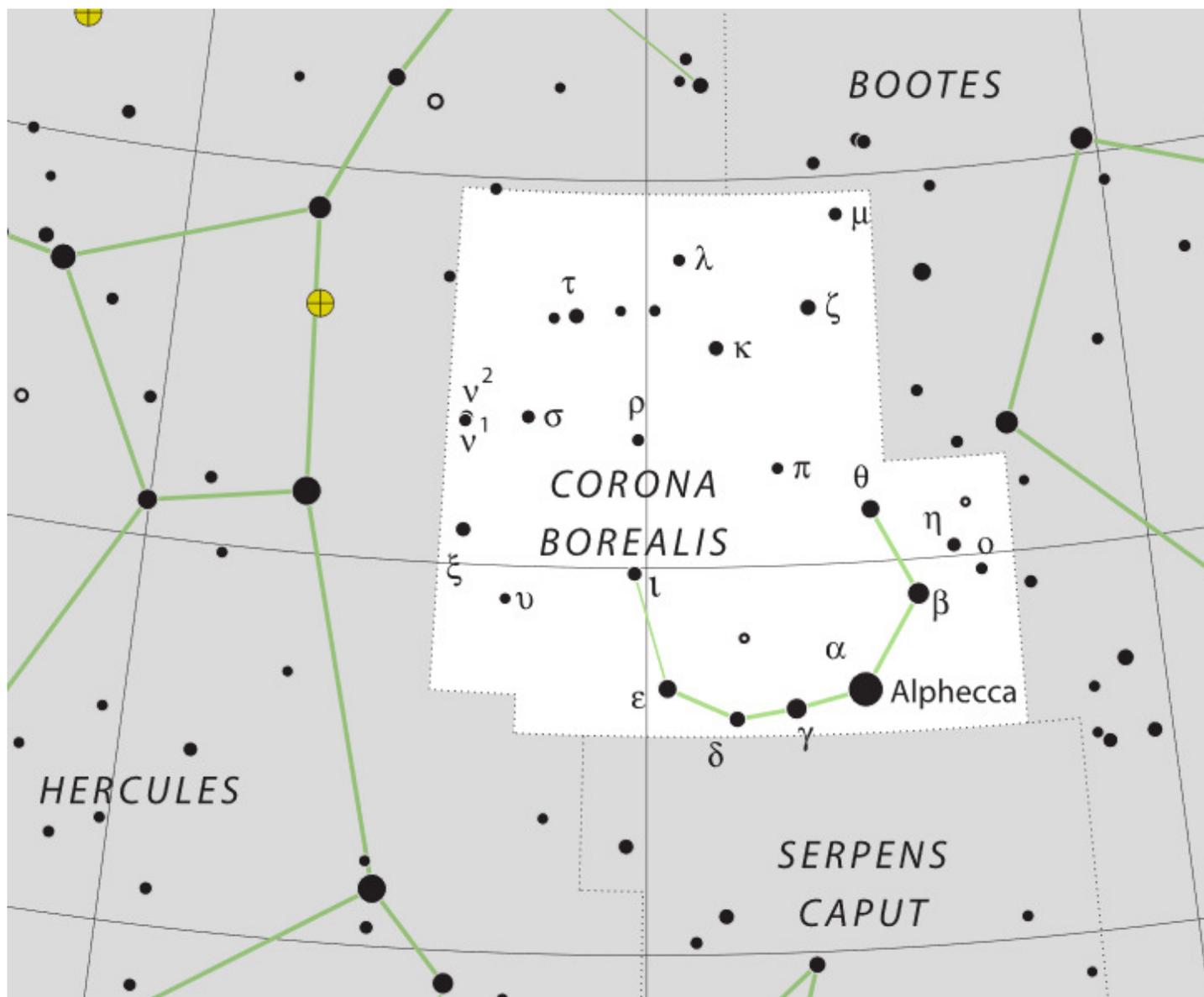


My Observing Pick: Corona Borealis – Northern Crown

For Greeks it's a crown, for the Welsh it's a castle, for Arabs it's a broken ring, for Bedouin Arabs it's a poor person's bowl, for native Americans it's a council of chiefs, a smoke hole, heavenly sisters, or bear den, for Australian aboriginals it's a boomerang.

No matter what, Corona Borealis is a pretty little constellation lying between Hercules and Bootes. There aren't any spectacular sights but it's pretty enough on its own.

Name	Object Type	Location	Description
Sigma (σ) CBr	Multiple Star System		Quintuple Yellow-white G Type stars
Zeta (ζ) CBr	Triple Star System		Two Blue-white components with a third spectroscopic member



Black Holes – Five Ways to Singularity

A black hole is a black hole, except for how massive and how they form. There are four known mechanisms and one hypothetical for black hole development.

1. Primordial Black Hole. Just after the big bang, inflation causes spacetime and matter to stretch and bulge, causing pockets of super dense matter. These pockets formed Primordial Black Holes.
2. Direct Collapse Black Hole. Just a few million years after the big bang massive, dense clouds collapse on themselves, forming Direct Collapse Black Holes.
3. Supermassive Black Hole. Formed by black hole mergers or by coalescing dense clusters of stars inside molecular clouds. 1 million or more times the mass of our Sun.
4. Intermediate Black Hole. Hypothetical. Created by the merger of black holes, or by many massive stars merging and causing a supernova. Less than 1 million times but more than 100 times the mass of our Sun.
5. Stellar Mass Black Hole. Caused by neutron stars with exhausted magnetic fields. They collapse into a black holes. 5 – 100 times the mass of our Sun.

Prepping for the Eclipse?

If you are heading out to find totality nirvana along the path of totality you are likely already ready. For those hanging back in Texas, there will be a decent 65-70% partial eclipse so why not get ready? Get a solar filter for your scope, cardboard solar glasses, heck, do what Mark Goll did and grab an objective from an old cheap scope to make a solar scope. His works great. Make a pinhole viewer or the cool **Sun Funnel** viewer – go to NASA's website and search for [sun funnel](#). They have plans! It's for telescopes and spotting scopes.

Coming up: **OUR 220th** ASTRONOMY CLUB MEETING

Thursday, **August 17th**, 2017 7:00 p.m. – 9:00 p.m., held in the conference room of TJ's restaurant on Loop Road (337). Have dinner and/or a beverage if you like. The New Braunfels Astronomy Club can be reached at www.astronomyntx.org

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