Keene Amateur Astronomers

The Newsletter for Keene Amateur Astronomers

Vol. 2024 No. 6 October 2024

ALMA

ALMA **Credit:** ESO/B. Tafreshi (twanight.org)

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Editor's Message

October is shaping up to be an incredible month with lots of celestial potential.

This month might turn out to have two visible comets. Comet C/2023 A3 (Tsuchinshan-ATLAS) can be viewed in the morning sky in the East just before sunrise. It will soon be disappearing for a few days only to reemerge as an evening sky object on the 13th and will subsequently rise higher in the sky each evening. Best viewing will be the 14th through the 24th looking West after sunset but will dim as the month progresses. Another comet has recently been discovered by the ATLAS survey in Hawaii and has not received its official name. This comet is part of a group called 'Kreutz sungrazers' and could be even brighter than Venus, but it is exceedingly difficult to predict how bright comets will be if they survive their trip around the Sun. This one will make its appearance in the morning in late October and early November.

In addition, we are still waiting on the Blaze Star to go nova and the possibility of another aurora based on the Sun's activity to illuminate the sky this weekend. The second largest sun flare this year occurred on October 1st and it is expected to reach the Earth on Friday the 4th. There is a possibility that we might see aurora's this coming weekend on the 4th and 5th. Let's hope for clear skies.

On October 2nd, parts of Chile and Argentina experienced an annular solar eclipse. I'm sure there will be videos of the event on the internet to watch it. In my travels early this morning I saw someone had posted pictures from Rapa Nui, Easter Island.

- Susan Rolke

Monthly Business Meeting

Please see the Minutes for details regarding the September meeting.

The next meeting will be held on October 4th at Keene State College in the Student Young Building, 7 pm. We will continue discussing the Milankovitch Cycle and comet C/2023 A3 Tsuchinghan Atlas.

International Observe the Moon Night, September 2024

The IOMN event hosted by Keene Public Library was a success. Approximately 40 individuals attended the event at the Ashuelot Park in Keene. The library set up a table with activities for kids and there were three telescopes brought by KAA members for the public to view the Moon. Individuals from the public expressed their surprise at seeing the Moon and commented on how the image was different in each of the telescopes. We had good weather for the event and the Moon was spectacular.

Astronomy Conventions, Retreats, and Talks

New England Fall Astronomy Festival, University of New Hampshire Observatory at UNH in Durham NH on October 4th and 5 is hosting an Astronomy Festival open to the public. Admission is free but donations are encouraged. Click the title of the event to learn more.

Astronomy in Chile Educator Ambassadors Program

By Susan Rolke

I am so excited to tell you about this program. I am so honored and humbled to have been selected to be part of this amazing professional development opportunity. I dreamt about being part of this program in 2015 when I first read about it. Since then, I have been working toward making that dream a reality.

The Astronomy in Chile Educator Ambassadors Program (ACEAP) is a program that was established to make the public aware of the science and research being conducted in Chile. The program is a collaboration between Associated Universities Inc. (AUI) and Association of Universities for Research in Astronomy (AURA), and the observatories they manage in Chile, including CTIO and Gemini which are now part of the new NSF's National Optical-Infrared Astronomy Research Laboratory (NSF's NOIRLab), and the National Radio Astronomy Observatory and ALMA, and is supported by the National Science Foundation.

The program began in 2015 but took a brief hiatus due to covid. Each year, individuals from K - 16 educators, amateur astronomers, and planetarium personnel are selected. Five individuals from the U.S. and its territories can apply for funded positions that cover all the expenses associated with the program except for

airfare to and within Chile. Another five self funded positions are available to individuals who are able to cover the cost of the total trip.

The program has two goals. It seeks to create a core group of individuals who will learn about the work being done at U.S. funded astronomy research facilities in Chile, how to use the data collected, and other resources available. The individuals selected are tasked with sharing their knowledge with the public, school students, and individuals pursuing higher education.

Bios for the ten 2024 Ambassadors have been posted on the ACEAP website. Prior to departing in the summer of 2025 on our 9 day expedition, we will be preparing for our immersive experience in Chile by taking part in a series of online conferences. While in the country we will visit several observatories, learn about astro tourism, the Chilean culture, and visit a school where we will deliver a lesson to the students that we have prepared. We will also discuss how to go about getting the word out to the public. After returning, each of us will be sharing what we have seen and learned with our communities and beyond.

Yes, I will be actively blogging again about my astronomy adventures. I also plan to take lots of pictures.

As many of you know, the big telescopes are being constructed in the Atacama Desert in Chile. It is a prime location for astronomy due to its high elevation and low humidity. As mentioned above, we will be visiting a number of observatories but will have access to behind the scene tours of three facilities, the opportunity to learn about the work being conducted at these observatories in depth. There is also the possibility that we might be able to do some night time observing at some locations weather permitting.

Gemini South at Sunset. Photo credit: Noirlab

One of the observatories we will be visiting is the Gemini South observatory near the summit of Cerro Pachon at an elevation of almost 9,000 feet. Its primary mirror is 8.1 m and collects wavelengths in the visible and infrared range.

We will visit Cerro Tololo Inter-American Observatory (CTIO) which has telescopes on both Cerro Tololo and Cerro Pachón in Chile. Both mountains are culturally important to the local communities.

CTIO at sunset. Photo credit NOIRlab

We will also have an opportunity to visit ALMA, the Atacama Large Millimeter/submillimeter Array. ALMA is the largest radio telescope in the world. It is located at 16,597 ft in the Chajnantor Plateau in the Atacama Desert which is one of the highest and driest places on the planet. The main array consists of 50 antenna, each with a 12 meter diameter, that work together to make a single telescope.

ALMA. Photo credit: NASA

I am really excited to visit these observatories and bring back what I learn. I hope to inspire younger individuals to pursue a career in astronomy and encourage everyone to chase their dreams. Most of all, I hope you take a moment to stop, look up at the night sky, and wonder.

Night Sky Network Online Webinar

The Night Sky Network hosts monthly webinars for members to learn more about space and current research. If you are looking to watch a presentation you missed, you can view a recording at Night Sky Network's youtube channel.

Join the Night Sky Network appears to be taking a month off but will be back in November with a webinar on Chandra Space Telescope.

NASA Night Sky Notes, October 2024

This article is distributed by NASA's Night Sky Network (NSN).
The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

October Night Sky Notes: Catch Andromeda Rising!

By Dave Prosper
Updated by Kat Troche

If you're thinking of a galaxy, the image in your head is probably the Andromeda Galaxy! Studies of this massive neighboring galaxy, also called M31, have played an incredibly important role in shaping modern astronomy. As a bonus for stargazers, the Andromeda Galaxy is also a beautiful sight.

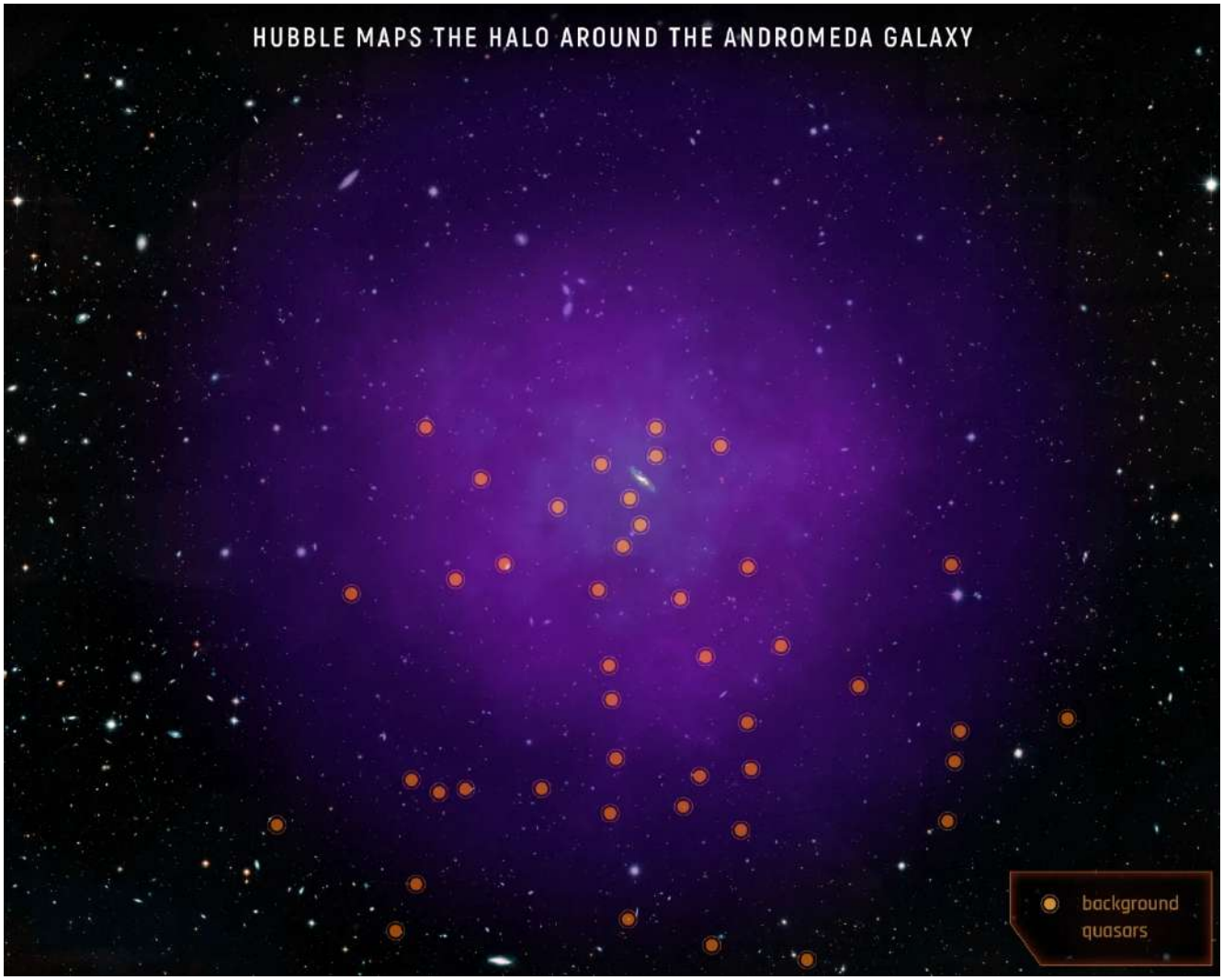
Spot the Andromeda Galaxy! M31's more common name comes from its parent constellation, which becomes prominent as autumn arrives in the Northern Hemisphere. Surprising amounts of detail can be observed with unaided eyes when seen from dark sky sites. Hints of it can even be made out from light polluted areas. Use the Great Square of Pegasus or the Cassiopeia constellation as guides to find it. Credit: Stellarium Web

Have you heard that all the stars you see at night are part of our Milky Way galaxy? While that is mostly true, one star-like object located near the border between the constellations of Andromeda and Cassiopeia appears fuzzy to unaided eyes. That's because it's not a star, but the Andromeda Galaxy, its trillion stars appearing to our eyes as a 3.4 magnitude patch of haze. Why so dim? Distance! It's outside our galaxy, around 2.5 million light years distant - so far away that the light you see left M31's stars when our earliest ancestors figured out stone tools. Binoculars show more detail: M31's bright core stands out, along with a bit of its wispy, saucer-shaped disc. Telescopes bring out greater detail but often can't view the entire galaxy at once. Depending on the quality of your skies and your magnification, you may be able to make out individual globular clusters, structure, and at least two of its orbiting dwarf galaxies: M110 and M32. Light pollution and thin clouds, smoke, or haze will severely hamper observing fainter detail, as they will for any "faint fuzzy." Surprisingly, persistent stargazers can still spot M31's core from areas of moderate light pollution as long as skies are otherwise clear.

Generated version of the Andromeda Galaxy and its companion galaxies M32 and M110. Credit: Stellarium Web

Modern astronomy was greatly shaped by studies of the Andromeda Galaxy. A hundred years ago, the idea that there were other galaxies beside our own was not widely accepted, and so M31 was called the "Andromeda Nebula." Increasingly detailed observations of M31 caused astronomers to question its place in our universe – was M31 its own "island universe," and not part of our Milky Way? Harlow Shapley and Heber Curtis engaged in the "Great Debate" of 1920 over its nature. Curtis argued forcefully from his observations of dimmer than

expected nova, dust lanes, and other oddities that the "nebula" was in fact an entirely different galaxy from our own. A few years later, Edwin Hubble, building on Henrietta Leavitt's work on Cepheid variable stars as a "standard candle" for distance measurement, concluded that M31 was indeed another galaxy after he observed Cepheids in photos of Andromeda, and estimated M31's distance as far outside our galaxy's boundaries. And so, the Andromeda Nebula became known as the Andromeda Galaxy.



While M31's disc appears larger than you might expect (about 3 Moon widths wide), its "galactic halo" of scattered stars and gas is much, much larger – as you can see here. In fact, it is suspected that its halo is so huge that it may already mingle with our Milky Way's own halo, which makes sense since our galaxies are expected to merge sometime in the next few billion years! The dots are quasars, objects located behind the halo, which are the very energetic cores of distant galaxies powered by black holes at their center. The Hubble team studied the composition of M31's halo by measuring how the quasars' light was absorbed by the halo's material. Credits: NASA, ESA, and E. Wheatley (STScI)

These discoveries inspire astronomers to this day, who continue to observe M31 and many other galaxies for hints about the nature of our universe. One of the Hubble Space Telescope's longest-running observing campaigns was a study of M31: the Panchromatic Hubble Andromeda Treasury (PHAT). Dig into NASA's latest discoveries about the Andromeda Galaxy, on their Messier 31 page.

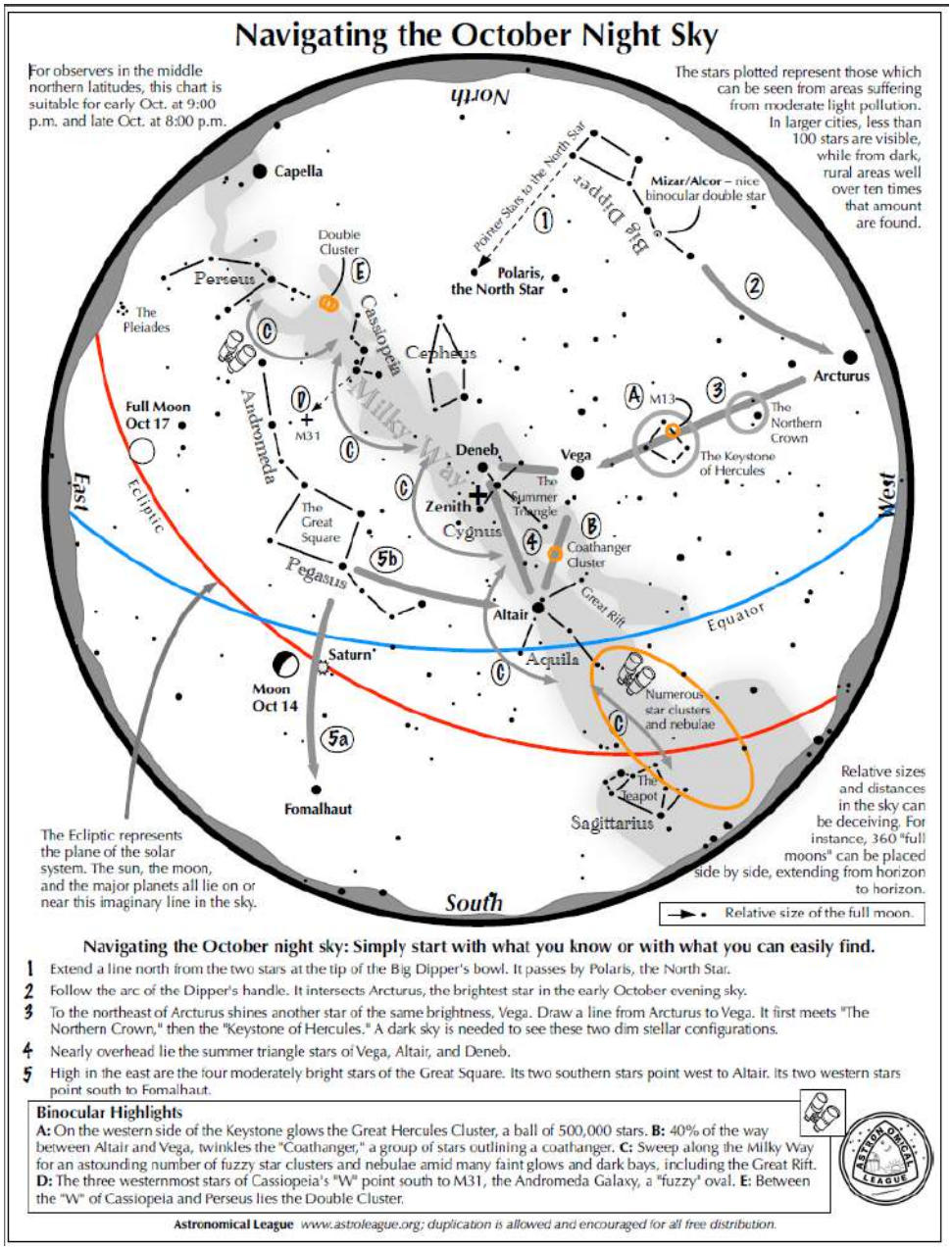
Originally posted by Dave Prosper: September 2021

Last Updated by Kat Troche: September 2024

Observing

To find out skywatching tips for June, click on the following links (in blue and underlined) to learn more.

Video: [What's Up October 2024 Skywatching Tips from NASA]



Click here for a larger image
[October 2024]

You may find past issues of the Astronomical League charts **here**.

The First Points of Aries and the Water Jug

Scan the area with binoculars for asterisms and stellar groupings

Between the First Point of Aries and the Water Jar

The **First Point of Aries** marks the intersection of the celestial equator and the ascending ecliptic which defines the location of 0 hrs Right Ascension.

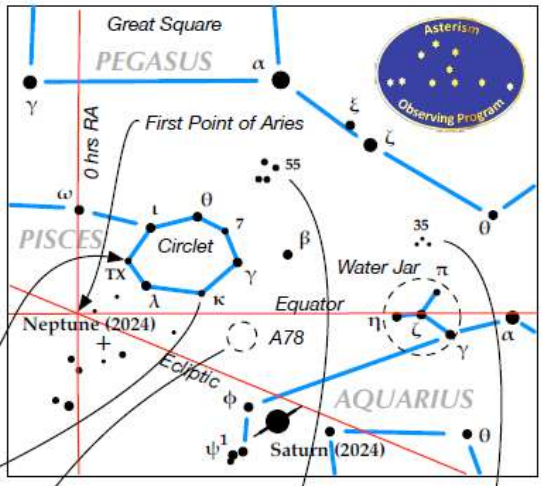
Naked eye and binocular sights

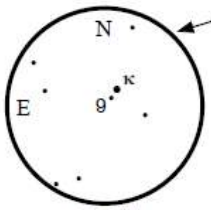
Circlet. These six, maybe seven depending on sky clarity and visual acuity, 4th and 5th magnitude stars trace a squashed circle at the far southwestern corner of Pisces.

It lies 10° below the southern edge of the asterism the **Great Square** in Pegasus, and less than 15° east of another asterism, the four 4th & 5th magnitude stars of the **Water Jar** in Aquarius.

These features are subtle, not bright. Best seen from a dark location with a transparent sky.

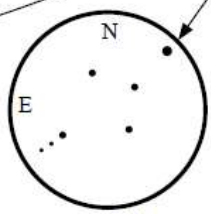
Binoculars users enjoy studying **TX Piscium**. The star varies between 4.8 and 5.2 magnitude, a noticeable amount to the careful observer. It appears as a distinct orange-red hue and its period is irregular, but averages around 224 days.





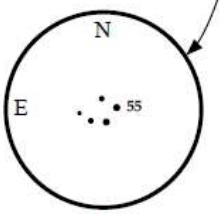
6° Field

Binocular Double
4.9 mag. Kappa Psc
6.2 mag. 9 Piscium
Separation: 9 min



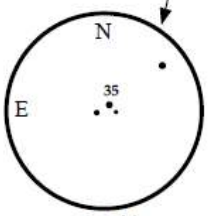
1° Field

Asterism A78
7 stars of 7-8 mag.
tracing the outline
of a "rocketship"



6° Field

Binocular sight
A stellar quintet
Four 5th mag stars
& one 6th mag star.



6° Field

Binocular sight
A stellar trio
One 5th mag. star &
two 6th mag. stars.

In 2024, Saturn lies 10° southwest of the Circlet and Neptune hides just 5° to its southeast.

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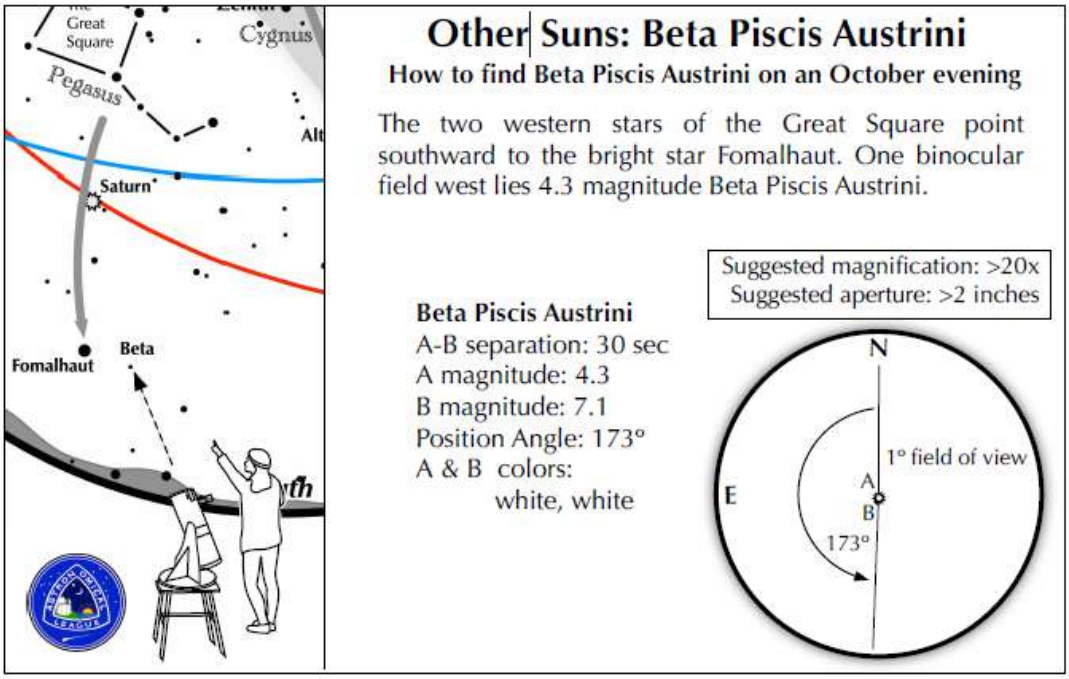
Astronomical League Double Star Activity: Beta Piscis Austrini

ASTRONOMICAL LEAGUE Double Star Activity



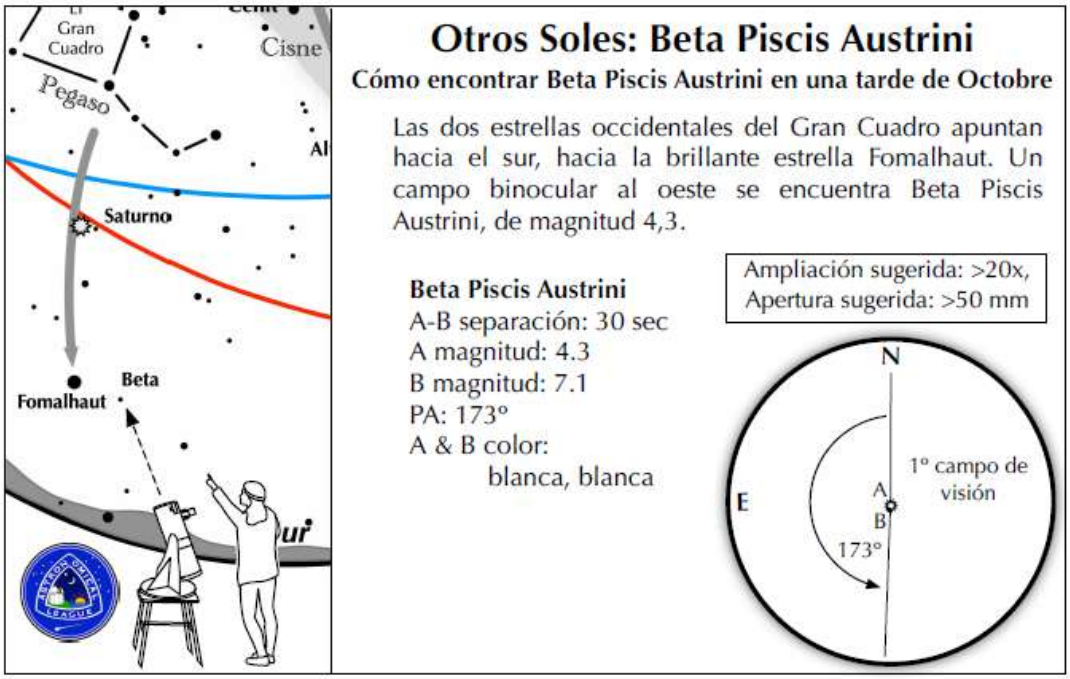
Other Suns: Beta Piscis Austrini

How to find Beta Piscis Austrini on an October evening

The two western stars of the Great Square point southward to the bright star Fomalhaut. One binocular field west lies 4.3 magnitude Beta Piscis Austrini.

Beta Piscis Austrini
A-B separation: 30 sec
A magnitude: 4.3
B magnitude: 7.1
Position Angle: 173°
A & B colors:
white, white

Suggested magnification: >20x
Suggested aperture: >2 inches



Otros Soles: Beta Piscis Austrini

Cómo encontrar Beta Piscis Austrini en una tarde de Octobre

Las dos estrellas occidentales del Gran Cuadro apuntan hacia el sur, hacia la brillante estrella Fomalhaut. Un campo binocular al oeste se encuentra Beta Piscis Austrini, de magnitud 4,3.

Beta Piscis Austrini
A-B separación: 30 sec
A magnitud: 4.3
B magnitud: 7.1
PA: 173°
A & B color:
blanca, blanca

Ampliación sugerida: >20x,
Apertura sugerida: >50 mm