

Highlights of the September Sky...

- - - 5th - - -

PM: Jupiter is 4° to the Moon's lower left with Antares 7° below the Moon.

First Quarter Moon
11:10 pm EDT

- - - 7th - - -

PM: Jupiter, the Moon, and Saturn form a straight line above the tail of Scorpius.

- - - 7th - - -

PM: The Moon and Saturn are nestled between the Teapot and Teaspoon asterisms in Sagittarius.

- - - 8th - - -

PM: The Moon is 6° to the left of Saturn.

- - - 14th - - -

Full Moon
12:33 am EDT

- - - 20th - - -

AM: A waning gibbous Moon is close to the Hyades cluster in Taurus, with Aldebaran 4° to the Moon's lower left.

- - - 21st - - -

Last Quarter Moon
10:41 pm EDT

- - - 23rd - - -

AM: The Moon is in Gemini and forms a right-angle triangle with Castor and Pollux.

- - - 24th - - -

AM: The Moon is less than 7° west of M44, the Beehive Cluster, in Cancer.

- - - 25th - - -

AM: The Moon is now less than 8° east of M44.

- - - 28th - - -

New Moon
2:26 pm EDT

Prime Focus

A Publication of the Kalamazoo Astronomical Society

★ ★ ★ September 2019 ★ ★ ★

This Months KAS Events

Observing Session: Saturday, September 7 @ 8:00 pm

The Moon, Jupiter & Saturn - Kalamazoo Nature Center

General Meeting: Friday, September 13 @ 7:00 pm

WMU Rood Hall (Room 1104) - See Page 8 for Details

Club Conjunction: Saturday, September 14 @ 12:00 pm

Kalamazoo Nature Center - See Page 4 for Details

Board Meeting: Sunday, September 15 @ 5:00 pm

Sunnyside Church (2800 Gull Road) - All Members Welcome

Observing Session: Saturday, September 21 @ 8:00 pm

Saturn & Galaxies of Autumn - Kalamazoo Nature Center

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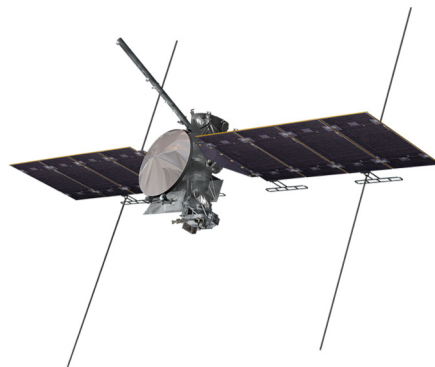
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The Kalamazoo Astronomical Society held its twenty-fifth annual Perseid Potluck Picnic at the Kalamazoo Nature Center on Saturday, August 10th with a start time of 6:00 pm. Approximately 50 members and guests attended this year's summer gathering.

Weather conditions for this year's picnic were quite pleasant. The temperature at start time was 79° F with 45% humidity. Skies started off partly to mostly cloudy, which prohibited solar observing. KAS Vice President Jack Price did setup the club's Coronado Personal Solar Telescope (PST), but no views of the Sun in hydrogen-alpha light were to be had. (Note that the Coronado PST is available for loan to all KAS members. See page 7 for more information.)

Jack & Ruth Price also deserve special thanks for providing folding tables draped in green and red-checkered table cloths for all the wonderful side dishes and desserts (as they have for the better part of 25 years). And special thanks to all those members who provided the ample selection of those side dishes and desserts. Jim Kurtz provided his grill for a record NINTH time and acted as the KAS gourmet chef. Burgers were seared and Nathan's hot dogs were toasted with perfection! They often go uncredited, but Richard Bell and Jean DeMott also deserve our appreciation for picking up the hamburgers, hot dogs, veggie burger, buns, and condiments from the store.

Mother Nature provided a special gift for our picnic goers to enjoy - no doubt in honor the 25th anniversary of the Perseid Potluck Picnic: A Sun Dog! Mark Miller was the first to spot the atmospheric optical phenomenon and several members searched for a tree-free view.



Dinner is served at the Kalamazoo Astronomical Society's 25th annual Perseid Potluck Picnic, held at the Kalamazoo Nature Center on Saturday, August 10, 2019.

Once dinner was complete and everyone had a chance to digest and converse with their fellow members, KAS President Richard Bell began the evening's entertainment. He started with a quick poll. Of the 50 members and guests in attendance during this year's gathering, only he and Mark Miller were at the inaugural Perseid Potluck Picnic in 1995. Several of those members from that time are still active, but were unfortunately unable to attend.

This year's Perseid Potluck Picnic featured our long-traditional *Gadget Night*, since the July General Meeting was dedicated to the 50th anniversary of the Apollo 11 Moon landing. Six KAS members and one guest shared doodads, doohickeys, and devices they either built or bought. Dave Woolf brought three gadgets to share. The first was an adjustable aluminum "multi-mount" that can hold up to three telescopes on his new Astro-Physics 1100GTO mount with Losmandy D-style dovetails. Next was a battery box for a 100Ah battery with cigarette lighter and PowerPole outlets, power inverter, and solar charge controller. Dave built this to power his equipment while attending the Nebraska Star Party last summer. Finally, Dave showed the carry case he built that doubles as a support stand for a 50W solar panel.

Duane Weller is a musician and used some spare parts from stage lighting and some old keyboard stands that fit together to provide a super-stable shelf for his computer. Duane also showed the miniature Raspberry Pi computer he used to control his mount and cameras for astrophotography. Chicago-area amateur Darren Drake, who often visits us while volunteering at Camp Eberhart near Three Rivers, shared the iPad/tablet computer stand made specifically for truss-tube Dobsonian telescopes. Jack Price brought a small



Dave Woolf shared this multi-mount during *Gadget Night*. It can hold up to three telescopes on a single equatorial mount at once.



Aaron Roman built this motorized Dobsonian tracking platform that he still needs to try out!

cooler that can hold two batteries to power equipment in the field. Joe Comiskey shared a pencil and paper! He's been using them to add sketches from the eyepiece into his observational notebook. Joe says sketching can train a person to better observe the object at hand.

Aaron Roman's first of two gadgets was a motorized Dobsonian tracking platform that he said he spent \$300 building, but has yet to use! Aaron then shared a tripod-mounted binocular extension with counterweight he built (and actually uses). It's constructed out of steel bar stock, a copper tube, plumbing fittings, aluminum channel, and zip ties. Richard Bell then shared the Optolong 2" L-eNhance filter he recently purchased. This is a new dual-band pass filter designed for DSLR cameras that helps block many forms of light pollution for astrophotography. Richard has yet to use the filter, but hopes to share some results during *Astrophotography Night* in October.

Richard then encouraged members to view the last gadget in Owl Observatory. On August 9th (the day before the picnic), Richard assisted KAS members Josh Taylor-Lehman and Dave Taylor with installing the new telescope pier into Owl Observatory. Josh estimated he spent 40 hours building the 10-inch diameter, 54-inch tall pier he says can hold up to 110,000 pounds.

A Public Observing Session was held after the picnic. The decision was made to go ahead with the session earlier in the day, but it looked like a mistake throughout the afternoon. Clouds started to part during *Gadget Night* and became mostly clear for the majority of the session. Richard Bell setup his Stellarvue 130mm refractor on an Astro-Physics Mach1GTO mount. Aaron Roman shared views through his Apertura 10-inch Dobsonian. Duane Weller brought his Stellarvue 102mm refractor on a Celestron AVX mount. Roger Williams also had his Stellarvue 102mm refractor (but with a carbon fiber tube) on an AVX mount. (Apologies if you were missed, but it was getting too dark to see who brought what.) This was easily our highest attended session so far this year. Aaron noted that at one point he had about 30 people in line waiting to view through his telescope. Highlights included a waxing gibbous Moon, Jupiter, and Saturn. A handful of bright Perseid meteors were also spotted. All in all, a very successful outing for the KAS!

by **Richard S. Bell**

Two important notes about the September General Meeting. First, it's being delayed one week, although it turns out it wasn't necessary. We sometimes delay the September meeting since it's the first week of school, so Mike Sinclair is usually pretty drained at week's end (he's not as young as he used to be). However, this month's meeting will not be held at the Kalamazoo Area Math & Science Center.

KAMSC has been undergoing renovations this summer and the presentation room has been used as a storage locker. There was no guarantee the presentation room would be cleared out in time for the meeting, so another location was needed. In short, please join us at 7pm on Friday, September 13th in room 1104 of Rood Hall, located on the campus of Western Michigan University. [Click here](#) for directions to Rood Hall. Parking in the lot adjacent to Rood Hall/Everett Tower is absolutely free, so don't let that stop you from attending.

Our guest speaker will be Dr. Xianzhe Jia from the University of Michigan. Dr. Jia will present *New Evidence of a Water Plume on Europa*. This topic is very timely since NASA has recently confirmed the Europa Clipper mission. To quote NASA: *The mission will conduct an in-depth exploration of Jupiter's moon, Europa, and investigate whether the icy moon could harbor conditions suitable for life.* NASA hopes to have the Europa Clipper spacecraft complete and ready for launch by 2023.

The KAS will host the fourth annual "Quintuple Conjunction" at the Kalamazoo Nature Center on Saturday, September 14th from 12 - 4pm (the day after the general meeting). Five West Michigan astronomy clubs will assemble to give updates on their current status and projects, exchange ideas, give fresh perspectives, and just hang out and get to know one another a little better. I hope a fair number of KAS members plan to attend, since we are hosting this year's event. Please see the flier on page 4 for more information. For the potluck lunch, we plan to cater the main course instead of grilling. We'll likely have either pulled pork or brisket sandwiches, which means will need an accurate count of who will be attending (plus, I'd like to make up name badges for everyone). Therefore, expect an e-mail from me shortly after you receive this newsletter.

As noted on the itinerary, we'll give a sneak peak of the new Leonard James Ashby Telescope in Owl Observatory. I crossed my fingers when I put that on the schedule, but it's guaranteed to happen now. As I write this on August 29th, the Astro-Physics 1600GTO mount has shipped and will be received on September 3rd! Right now, the plan is to assemble everything on either Friday, September 6th or Saturday, September 7th. We'll need volunteers to help, of course, but members are welcome to just show up and watch. After all, this is a group effort, so this moment should be shared by the entire membership. I'll keep you updated!



QUINTUPLE CONJUNCTION

of West Michigan Astronomy Clubs

West Michigan astronomy clubs assemble! Members of the Grand Rapids Amateur Astronomical Association, Kalamazoo Astronomical Society, Muskegon Astronomical Society, Newaygo County Dark Sky Astronomers, and Shoreline Amateur Astronomical Association gather for lunch, solar observing, club updates, and the exchange of ideas. This year's conjunction is hosted by the Kalamazoo Astronomical Society. Here is the planned itinerary:

- 12:00 pm** Potluck Lunch in the KNC Picnic Area
Featuring solar observing with KAS member telescopes.
- 1:30 pm** Tour of Owl Observatory
Sneak preview of the new Leonard James Ashby Telescope.
- 2:00 pm** Group Photo
KNC Amphitheater - Adjacent to Owl Observatory
- 2:15 pm** Astronomy Club Presentations
Cooper's Glen Auditorium - Located within the Visitor's Center
- 4:00 pm** End of Quintuple Conjunction
Visitor's Center closes at 5pm - Gates remain open until 7:30 pm.

Saturday, September 14th, 12 - 4pm

Kalamazoo Nature Center • 7000 N. Westnedge Ave.



NASA Night Sky Notes...

Spot the Stars of the Summer Triangle

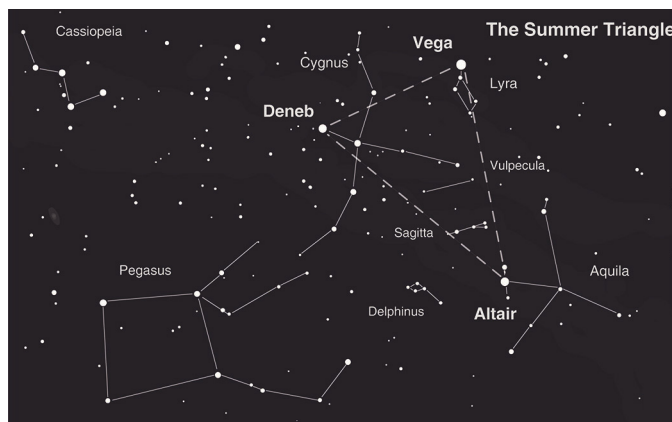
by **David Prosper**

September skies are a showcase for the **Summer Triangle**, its three stars gleaming directly overhead after sunset. The **equinox** ushers in the official change of seasons on September 23rd. **Jupiter** and **Saturn** maintain their vigil over the southern horizon, but set earlier each evening, while the terrestrial planets remain hidden.

The bright three points of the **Summer Triangle** are among the first stars you can see after sunset: Deneb, Vega, and Altair. The Summer Triangle is called an **asterism**, as it's not an official constellation, but still a striking group of stars. However, the Triangle is the key to spotting multiple constellations! Its three stars are themselves the brightest in their respective constellations: Deneb, in Cygnus the Swan; Vega, in Lyra the Harp; and Altair, in Aquila the Eagle. That alone would be impressive, but the Summer Triangle also contains two small constellations inside its lines, Vulpecula the Fox and Sagitta the Arrow. There is even another small constellation just outside its borders: diminutive Delphinus the Dolphin. The Summer Triangle is huge!

The **equinox** occurs on September 23rd, officially ushering in autumn for folks in the Northern Hemisphere and bringing with it longer nights and shorter days, a change many stargazers appreciate. Right before sunrise on the 23rd, look for Deneb - the Summer Triangle's last visible point - flickering right above the western horizon, almost as if saying goodbye to summer.

The Summer Triangle region is home to many important astronomical discoveries. Cygnus X-1, the first confirmed black hole, was initially detected here by X-ray equipment on board a sounding rocket launched in 1964. NASA's Kepler Mission, which revolutionized our understanding of



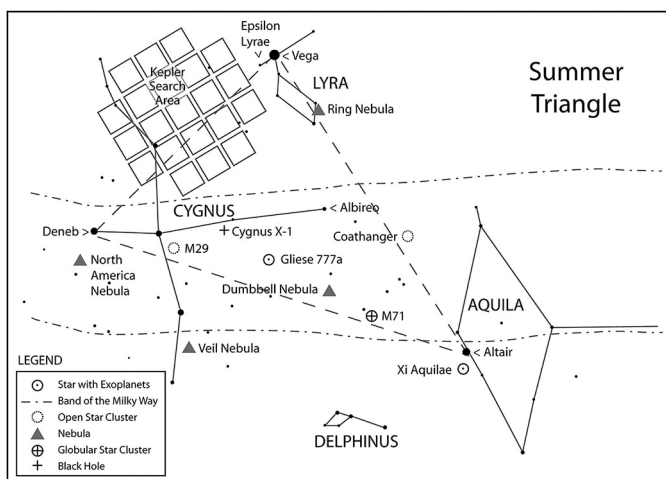
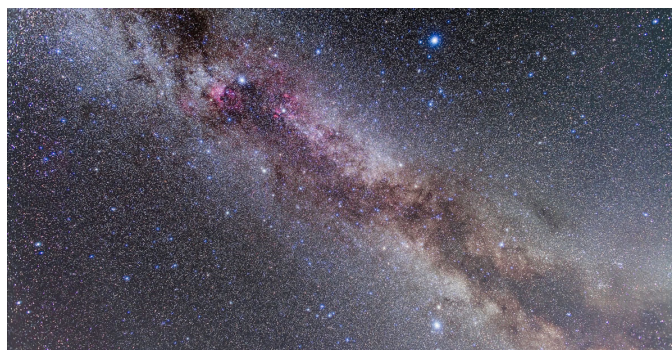
This wider view of the area around the Summer Triangle includes another nearby asterism: the Great Square of Pegasus.

exoplanets, discovered thousands of planet candidates within its initial field of view in Cygnus. The Dumbbell Nebula (M27), the first planetary nebula discovered, was spotted by Charles Messier in the diminutive constellation Vulpecula way back in 1764!

Planet watchers can easily find **Jupiter** and **Saturn** shining in the south after sunset, with Jupiter to the right and brighter than Saturn. At the beginning of September, Jupiter sets shortly after midnight, with Saturn following a couple of hours later, around 2am. By month's end the gas giant duo are setting noticeably earlier: Jupiter sets right before 10:30 pm, with Saturn following just after midnight. Thankfully for planet watchers, earlier fall sunsets help these giant worlds remain in view for a bit longer. The terrestrial planets, Mars, Venus, and Mercury, remain hidden in the Sun's glare for the entire month.

Discover the latest in space science from the NASA missions studying our universe at nasa.gov.

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!



Once you spot the Summer Triangle, you can explore the cosmic treasures found in this busy region of the Milky Way. Make sure to "Take a Trip Around the Triangle" before it sets this fall! Find the [full handout here](#).

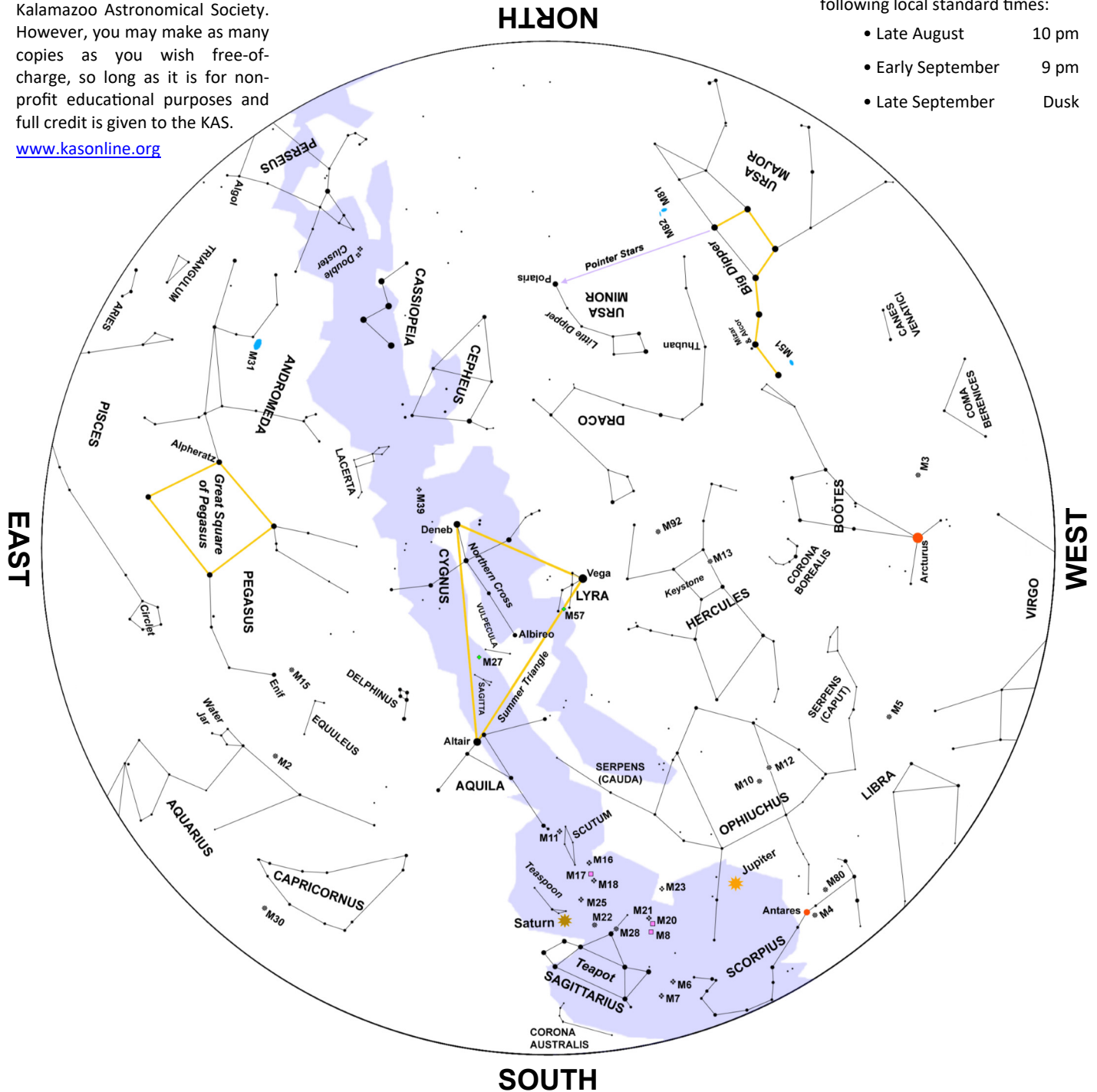
— September Night Sky —

This star map is property of the Kalamazoo Astronomical Society. However, you may make as many copies as you wish free-of-charge, so long as it is for non-profit educational purposes and full credit is given to the KAS.

www.kasonline.org

This map represents the sky at the following local standard times:

- Late August 10 pm
- Early September 9 pm
- Late September Dusk



Chase the Moon as it circles the sky in September. A first quarter Moon moves to within 4° of Jupiter on Sept. 5th. That's close enough to fit within the field-of-view of a pair of 7×50 or 10×50 binoculars. How many of the Galilean moons of Jupiter can you spot while enjoying a close-up view of the Moon/Jupiter pairing?

A waxing gibbous Moon will hopscotch past Saturn on the nights of Sept. 7th and 8th. The Moon will be over 6° to Saturn's right on the 7th and another 6° to the ringed wonder's left on the 8th.

Shifting to the early morning sky, a waning gibbous Moon visits the Hyades star cluster on Sept. 20th. Less than 4°

will separate the Moon and orange giant Aldebaran - again fitting within the field-of-view of binoculars.

The Moon will then buzz past the Beehive Cluster (M44) in Cancer on the morning of Sept. 24th & 25th. Finally, a thin waning crescent Moon will be 3° left of Regulus in Leo on Sept. 26th.

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September 2019

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PST Available for Checkout!



The Kalamazoo Astronomical Society's Coronado Personal Solar Telescope (PST), mounted on the light and ultra-portable Tele Vue Tele-Pod, is available for loan.

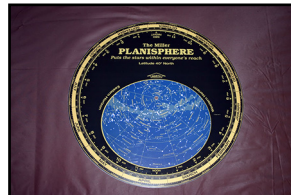
If you'd like to observe the Sun in hydrogen alpha and see prominences dance along the solar-limb and filaments crisscross its surface then contact the KAS Equipment Manager, **Arya Jayatilaka**, today:

<http://www.kasonline.org/loanscopes.html>

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\$20.00 each

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Public Observing Sessions



Saturday, September 7th

Highlights: The Moon, Jupiter & Saturn

Saturday, September 21st

Highlights: Saturn & Galaxies of Autumn

Gates Open: 8:00 pm • Observing Begins: 8:30 pm

Kalamazoo Nature Center

— 7000 N. Westnedge Ave. —

General Meeting Preview

New Evidence of a Water Plume on Europa



presented by **Dr. Xianzhe Jia**, University of Michigan

Jupiter's moon, Europa, is one of the best places in our solar system to search for extraterrestrial life because it is believed to harbor a global ocean beneath its ice cover. The most compelling evidence for that subsurface ocean came from the magnetic field measurements acquired by NASA's Galileo spacecraft during flybys of the moon. Signatures of putative water plumes at Europa have recently been identified in Hubble Space Telescope images, but all detections were made at the limit of sensitivity of the data. Motivated by the Hubble results, we reanalyzed the magnetic field and plasma wave data obtained by Galileo, and suggest that in 1997, the spacecraft passed through a water plume rising a few hundred kilometers above Europa's surface. Our findings provide the first locally acquired evidence that Europa's subsurface ocean may be venting plumes of water vapor above its icy crust.

Friday, September 13 @ 7:00 pm

Western Michigan University

Rood Hall (Room 1104) • 2101-2299 Wilbur Ave.

— *Free Parking in Everett Tower/Rood Hall Parking Lot* —

Kalamazoo Astronomical Society
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Kalamazoo, MI 49008

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