Newsletter of the Pomona Valley Amateur Astronomers

Set your course by the stars,
not by the lights of every passing ship.
Johannes Kepler

Volume 38 Number 03 ***nightwatch*** **March 2018**

Speaker Announcement

Our speaker on March 2 will be Eric Grosfils, professor of Planetary Geology at Pomona College. The title of his talk is "Modern Mars: Ice and Climate".

Upcoming School Events

Thursday, March 8th, 6 PM at Stork Elementary in Alta Loma.

Usually 330 to 400 people attend. There will be a spaghetti dinner before the event so let the Board know you're coming and they will RSVP for you.

Club Events Calendar

March 2 General Meeting
March 8 Star Party – Stork Elementary
March 10 Star Party – Cow Canyon Saddle
March 23 Star Party – Sumner Danbury Elementary

April 14 Star Party - Landers
April 18 Board Meeting
April 27 General Meeting
April 28 Claremont Public Library,
Children's Book Festival

May 16 Board Meeting
May 24 – 28 RTMC

June 1 General Meeting
June 9 Star Party – White Mtn

July 14 Star Party – Cow Canyon Saddle
July 18 Board Meeting
July 27 General Meeting

Aug 11 Star Party – Angeles Oaks
Aug 15 Board Meeting

PVAA Officers and Board

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School Star Party

On Friday evening, February 23, 2018, from 6-9 pm, PVAA members were invited as guests to set up telescopes at the Foothill Knolls Stem Academy of Innovation in Upland, for their annual "Star Palooza". Jeff set up two telescopes: A 10" Dobsonian, and the famous car mounted 11" Refractor telescope, in anticipation of viewing the Orion nebula, Pleiades, double cluster in Perseus, and of course our bright shining Moon. M37 in Auriga, the beehive in Cancer, and M41 south of Sirius were also available, but fainter. Jeff aimed his 11" on M42 until the Moon was off the zenith. The 10" dob was on the Pleiades and then the double cluster. The Moon was nearly straight above us for most of the evening. One student set-up his 4" f/4 Celestron telescope as well; also focused on the Pleiades. I brought a table top Celestron First Scope for the kids and parents to focus on various objects. They were excited to try it out, and surprised at the quality of viewing, in such a compact telescope. We also displayed two very heavy meteorite pieces from Jeff's collection, an iron that fell to Earth over 60,000 years ago in Odessa, Texas, and a stony one from West Africa. NASA Planet photos were on display for kids to take home. We were provided with hot tea, chocolate and snacks, compliments of the school and staff. We had lots of fun with at least 200 attendees, even though it was quite cold. Here are a few photos.

Cori Charles

PVAA Gen Meeting 02/02/18

Mathew Wedel reminded the attendees of the upcoming RTMC (Riverside Telescope Makers Conference) this May. They are celebrating their 50th anniversary.

Our own Cori Charles was named a NASA “Solar System Ambassador” – Congratulations Cori!

Terry Nakazono gave a talk on his trip to “Birr Castle and the Leviathan of Parsonstown (or the Rosse six foot telescope).” This is in Ireland, and it was the largest telescope in the world at the time with an aperture of 72 inches. (6 feet) He had several pictures of the grounds as they are today.

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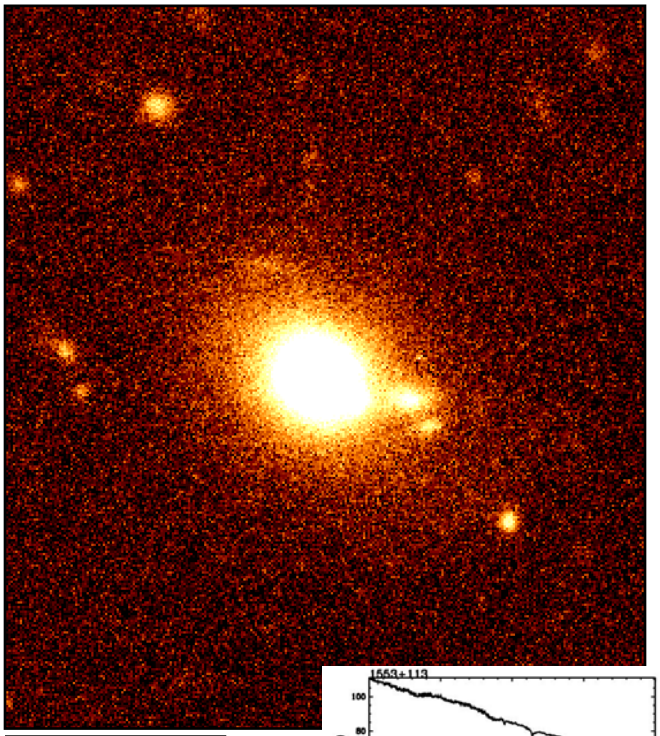
"The Strange Case of BL Lac" was the topic of our main speaker, David Nakamoto. He went through the history of recording the events and objects in the universe - from eyesight to telescopes - with pencil and pad handy to sketch out what you saw. Next came the photographic plates that required long exposures, an excellent drive, and good seeing. Using those plates man was able to catalog variable stars. From there we added the radio wave with radio astronomy, being able to ‘pin point’ a radio source in the sky by 1968.

BL Lacertae or BL Lac is a highly variable, extragalactic AGN (active galactic nucleus). At first it was thought to be a variable star within the Milky Way galaxy. Upon further study it was found not to be a star but the core of a galaxy, with its relativistic jet closely aligned to our line of sight. “Blazar” and “BL Lac Object” can be used interchangeably.

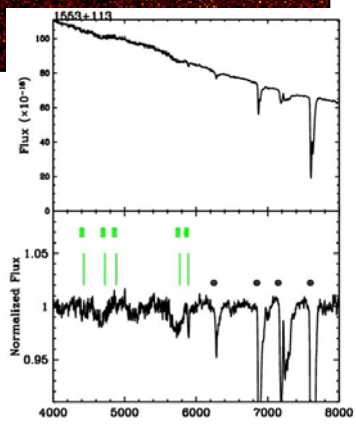
John L. Schmitt first noticed the peculiar nature of BL Lac in 1968 when he matched it with a radio object, VRO 42.22.01. Since then at least 30 more have be found by matching the ‘variable star’ light source with a radio object.

BL Lac is thought to be ultimately powered by material falling onto a supermassive black hole at the center of the host galaxy. Gas, dust and the occasional star are captured and spiral into this central black hole creating a hot accretion disk which generates enormous amounts of energy in the form of photons, electrons, positrons and other elementary particles.

Gary Thompson



BL Lacertae



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What Is the Ionosphere?

High above Earth is a very active part of our upper atmosphere called the ionosphere. The ionosphere gets its name from ions—tiny charged particles that blow around in this layer of the atmosphere.

How did all those ions get there? They were made by energy from the Sun!

Everything in the universe that takes up space is made up of matter, and matter is made of tiny particles called atoms. At the ionosphere, atoms from the Earth's atmosphere meet up with energy from the Sun. This energy, called radiation, strips away parts of the atom. What's left is a positively or negatively charged atom, called an ion.

The ionosphere is filled with ions. These particles move about in a giant wind. However, conditions in the ionosphere change all the time. Earth's seasons and weather can cause changes in the ionosphere, as well as radiation and particles from the Sun—called space weather.

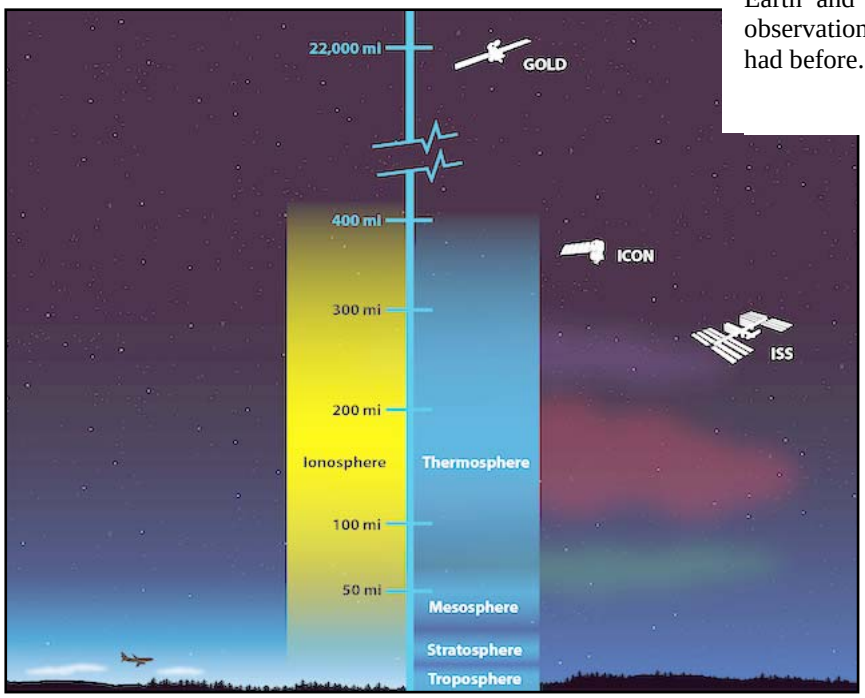
These changes in the ionosphere can cause problems for humans. For example, they can interfere with radio signals between Earth and satellites. This could make it difficult to use many of the tools we take for granted here on Earth, such as GPS. Radio signals also allow us to communicate with astronauts on board the International Space Station, which orbits Earth within the ionosphere. Learning more about this region of our atmosphere may help us improve forecasts about when these radio signals could be distorted and help keep humans safe.

In 2018, NASA has plans to launch two missions that will work together to study the ionosphere. NASA's GOLD (Global-scale Observations of the Limb and Disk) mission launched in January 2018. GOLD will orbit 22,000 miles above Earth. From way up there, it will be able to create a map of the ionosphere over the Americas every half hour. It will measure the temperature and makeup of gases in the ionosphere. GOLD will also study bubbles of charged gas that are known to cause communication problems.

A second NASA mission, called ICON, short for Ionospheric Connection Explorer, will launch later in 2018. It will be placed in an orbit just 350 miles above Earth—through the ionosphere. This means it will have a close-up view of the upper atmosphere to pair with GOLD's wider view. ICON will study the forces that shape this part of the upper atmosphere.

Both missions will study how the ionosphere is affected by Earth and space weather. Together, they will give us better observations of this part of our atmosphere than we have ever had before.

Linda Hermans-Killiam



To learn more about the ionosphere, check out NASA Space Place:
https://spaceplace.nasa.gov/ionosphere

This illustration shows the layers of Earth's atmosphere. NASA's GOLD and ICON missions will work together to study the ionosphere, a region of charged particles in Earth's upper atmosphere. Changes in the ionosphere can interfere with the radio waves used to communicate with satellites and astronauts in the International Space Station (ISS).
Credit: NASA's Goddard Space Flight Center/Duberstein (modified)

Amazing Facts

The International Space Station is a habitable satellite currently in orbit around the Earth.
It was created and is maintained in a joint effort between the space agencies of USA, Russia, Japan, Europe and Canada.
The station travels at an average speed of 17,100 miles per hour and can often be seen with the naked eye,
traveling through the night sky.

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