The Astronews

HUI KILOLANI

Volume 61, Issue 2

February 2013

www.hawastsoc.org

## Record Setting Asteroid Flyby

**NASA Science News**

On Feb. 15th an asteroid about half the size of a football field will fly past Earth only 17,200 miles above our planet's surface. There's no danger of a collision, but the space rock, designated 2012 DA14, has NASA's attention.

"This is a record-setting close approach," says Don Yeomans of NASA's Near Earth Object Program at JPL. "Since regular sky surveys began in the 1990s, we've never seen an object this big get so close to Earth."

2012 DA14 is a fairly typical near-Earth asteroid. It measures some 50 meters wide, neither very large nor very small, and is probably made of stone, as opposed to metal or ice.

"The orbit of the asteroid is known well enough to rule out an impact." emphasizes Yeomans. Even so, it will come interestingly close. Yeomans says the asteroid will thread the gap between low-Earth orbit, where the ISS and many Earth observation satellites are located, and the higher belt of geosynchronous satellites, which provide weather data and telecommunications. During the hours around closest approach, the asteroid will brighten until it resembles a star of 8th magnitude. Theoretically, that's an easy target for backyard telescopes. The problem, points out Yeomans, is speed. "The asteroid will be racing across the sky, moving almost a full degree (or twice the width of a full Moon) every minute. That's going to be hard to track." Only the most experienced amateur astronomers are likely to succeed.

For more information about 2012 DA, see http://neo.jpl.nasa.gov ☆

## Inside this issue:



Upcoming Events:

☆The next meeting is 7:30PM on **Tues., Feb 5** at the Bishop Museum Planetarium

☆Planetarium shows with **Barry Peckham** are ON HOLD until further notice. www.bishopmuseum.org/calendar

☆The next Board Meeting is Sun., **Feb 3** at 3:30 p.m. at the POST building at UH.

## Up To The Minute:

### SIGNING UP FOR SCHOOL OR NON-PROFIT STAR PARTIES

*By JOHN GALLAGHER*

In order to provide all members with a telescope a chance to volunteer for School Star Parties, a new procedure will be implemented.

Since there seems to be a declining attendance at our monthly club meetings at which time members are asked to sign up for upcoming Star Parties, the sign up sheet will still be passed around. But in addition, an e-mail will be sent to all members who either currently support or have supported us in the past as well as those who did not attend the current meetings.

This new procedure will serve two purposes: remind those who have signed up of their commitment and allow those who did not have a chance to sign up to volunteer to support the function by just showing up. This e-mail will be sent around two days before the function.

The following information will be provided: *Date, Set-up Time, Location, Number signed up at club meeting, and Number of additional members needed.*

Even if zero additional members are indicated, any member with a telescope is still encouraged to attend. Interaction with the public on expanding knowledge of the universe is one of the missions for the Hawaiian Astronomical Society.

For additional information please contact the School Star Party Coordinator -

**John Gallagher**

**683-0118** (leave message)

e-mail **gallaghej002@hawaii.rr.com**

*Clear Nights,*

*John*


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The Astronews is a monthly newsletter of the Hawaiian Astronomical Society. Some of the contents may be copyrighted. We request that authors and artists be given credit for their work. Contributions are welcome. Send them to the Editor via email. The deadline is the 16th of each month. We are not responsible for unsolicited artwork.

## President's Message

by Chris Peterson

Those of you who attended our January meeting were treated to a demonstration of the newly renovated planetarium at Bishop Museum. One surprise for me was the quality of the new GOTO analog star projector. The stars were much more accurately rendered than by the previous projector, and the night sky looks great! Stars and Milky Way brightness can be varied to simulate various sky conditions. The digital system doesn't display the stars as nicely, but it has so many other capabilities. It's hard to just pick out a few to mention. If you haven't seen it yet, it's a good reason to attend our meeting in February. We'll be spending a lot of time at the next few meetings seeing what the new system can do.

The potluck before the meeting was even bigger than the last one we had. Rain kept us inside, but the food was good! Some of our members have requested that we hold another swap meet, so that will be our next special activity. Polish up your excess equipment that you'd like to sell and stay tuned for the date.

This promises to be an interesting year for sky watchers. Asteroid 2012 DA 14 will pass over our heads closer than geosynchronous satellites on February 15th, but it will be daytime for us here in Hawaii. Two comets are worth keeping track of. Comet Pan-STARRS in March and Comet ISON in December both have the potential of becoming very bright, but you know how comets are! We'll just have to wait and see.

The Sun is expected to reach the peak of its 11-year activity cycle this year. Of course Jupiter is well placed for observing now, and it will pass the baton to Saturn as best placed early evening object in the Spring.

There's no shortage of viewing targets in the sky this year. If the weather's bad, we can still take advantage of the planetarium to keep us entertained. So keep looking up!

*Chris*

## Ode To Our Telescope

by Mel Levin

*There it is, covered in plastic*
*With clever bungee cords and rope tied*
*So no one could easily loosen these bonds - if you tried*
*Our once proud Litebox, the Doyen of local scopes*
*One that was covered by most knowledgeable folks*
*Now relegated to a corner of the dining room*
*Even the still attached Telrad partook of the gloom.*

*But it wasn't always this way*
*For ten years it was used regularly in work and play*
*We took it to star parties and school parties to please*
*Ran through the Messier's and Caldwell with ease,*
*And just when Herschel's tough list loomed*
*We looked at each other and realized we're doomed.*

*For that old scope suddenly grew too tight*
*To move it or lift it took all our might*
*And though we were helped by friends so true*
*We soon realized that Barr and Paul were observers too.*
*And so slowly we cut our trips to Dillingham*
*In spite of Gary's pizza-pepperoni and ham.*

*Then we moved it to our front yard*
*So using it meant moving it a bit--not hard*
*And we waited for the skies to clear*
*But they never did this time of year.*

*(Continued on page 9)*

NASA's Space Place

# The Art of Space Imagery

By Diane K. Fisher

When you see spectacular space images taken in infrared light by the Spitzer Space Telescope and other non-visible-light telescopes, you may wonder where those beautiful colors came from? After all, if the telescopes were recording infrared or ultraviolet light, we wouldn't see anything at all. So are the images "colorized" or "false colored"?

No, not really. The colors are translated. Just as a foreign language can be translated into our native language, an image made with light that falls outside the range of our seeing can be "translated" into colors we can see. Scientists process these images so they can not only see them, but they can also tease out all sorts of information the light can reveal. For example, wisely done color translation can reveal relative temperatures of stars, dust, and gas in the images, and show fine structural details of galaxies and nebulae.

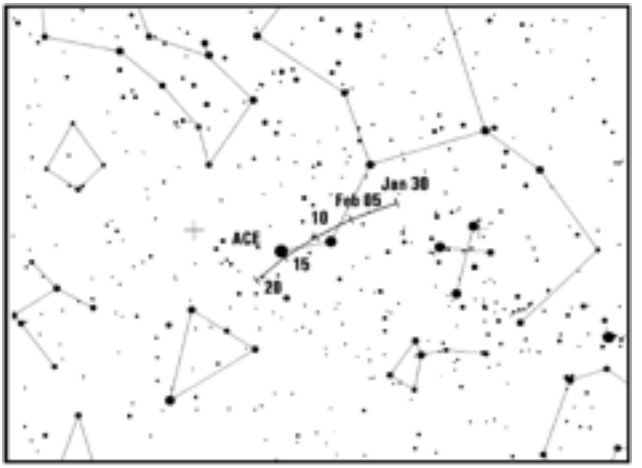
*(Continued on page 9)*


This image of M101 combines images from four different telescopes, each detecting a different part of the spectrum. Red indicates infrared information from Spitzer's 24-micron detector, and shows the cool dust in the galaxy. Yellow shows the visible starlight from the Hubble telescope. Cyan is ultraviolet light from the Galaxy Evolution Explorer space telescope, which shows the hottest and youngest stars. And magenta is X-ray energy detected by the Chandra X-ray Observatory, indicating incredibly hot activity, like accretion around black holes. *Credit: NASA*

Looking back to December, we had the potential for a reasonable show with the Geminids. Unfortunately, we had cloudy and rainy weather that substantially lowered the count, but there were a few holes in the clouds that allowed some views. Early in the evening I paused for a minute on the front porch and saw a meteor; this occurred three times – I took this as a good omen. The weather was just too rough to plan a complete outing, so I just observed from the backyard. It was a nice show, with several bright meteors.

My final count was 36 for less than an hour! Mike Morrow also saw a few from his big island vantage point.

The α-Centaurids (ACE) are one of the main southern hemisphere meteor showers. IMO research showed that this shower produced many very bright meteors (magnitude -3 and brighter), that sported persistent trains. However, in the last twenty five years or so the overall count has been low with only occasional bursts of bright meteors. We have a unique, southern location from which to view this shower compared to the mainland US. Although the radiant will be scraping the southern horizon, we can still view the northbound shower members. This might be a good year to catch this shower! (see chart below):




| *Last Quarter* | *New Moon* | *First Quarter* | *Full Moon* |
|---|---|---|---|
| **Feb 03** | **Feb 10** | **Feb 17** | **Feb 25** |

| Shower | Activity | Max Date | λ 2000 | Radiant α | Radiant δ | V∞ km/s | *r* | ZHR |
|---|---|---|---|---|---|---|---|---|
| α-Centaurids (ACE) | 1/28 - 2/21 | Feb 08 | 319.2° | 210° | -59° | 56 | 2.0 | 6 |

**Happy observing and "Lunar" new year!**

***Tom Giguere***, 808-782-1408, thomas.giguere@yahoo.com;
***Mike Morrow***, PO Box 6692, Ocean View, HI 96737.

## Planets Close To the Moon

Times are Hawaii Standard Time

**Feb 2, 21h, M 3.5° SSW of Saturn**
(93° from sun in morning sky)

**Feb 11, 00h, M 5.5º NNW of Mars**
(15° from sun in evening sky)

**Feb 11, 06h, M 5.0º NNW of Mercury**
(17º from sun in evening sky)

**Feb 13, 05h, M 4.2º NNW of Uranus**
(41º from sun in evening sky)

**Feb 18, 02h, M 0.90º S of Jupiter**
(97º from sun in evening sky)

Venus and Neptune closer that 15° from the sun when near the moon in February.

## Other Events of Interest

Times are Hawaii Standard Time

**Feb 4, 12h, Mars 0.41° SSE of Neptune**
(16° from sun in evening sky)

**Feb 6, 13h, Mercury, Mars, and Neptune within a 1.61° circle**
(15° from sun in evening sky)

**Feb 8, 08h, Mercury 0.27° NNW of Mars** (15° from sun in evening sky)

**Feb 9, 21.22h, Moon new**

**Feb 16, 11h, Mercury at greatest elongation** (18.1° east of the sun in evening sky)

**Feb 18, 15h, Moon 0.97° SSW of 4 Vesta**
(103° from sun in evening sky)

**Feb 20, 21h, Neptune at conjunction with sun** (Passes into morning sky)

**Feb 25, 10:28 h, Moon full**

### ☿ Mercury

Makes an evening appearance in February, reaching maximum elongation on Feb 16.

### ♀ Venus

Is very low in the southeast before dawn and may be too close to the sun to viewed toward the end of the month.

### ♂ Mars

Mars is now too close to the western horizon after sunset to be seen crisply. It is very close to Mercury on Feb 8.

### ♃ Jupiter

Close to the meridian after sunset and is well placed for viewing in the early evening.

### ♄ Saturn

Saturn rises just before midnight and is best observed near the meridian before dawn.

### ♅ Uranus

Uranus is visible in the evening sky in the southwest after sunset.

### ♆ Neptune

Too close to the sun to be viewed in February.

### Asteroid 4-Vesta

Can be viewed very close to the moon on February 18.

### Dwarf Planet ♇ Pluto

Visible in the morning sky before dawn, but will be better placed for viewing later in the year.

# Meeting Minutes

by Gretchen West

***President Chris Peterson*** called the January 8, 2013 meeting of the Hawaiian Astronomical Society to order at 7:32p.m. The meeting was held at the Planetarium of the Bishop Museum.. There were thirty-nine in attendance.

**Planetarium Upgrade**: ***Chris Peterson*** welcomed everyone to the newly renovated Bishop Museum Planetarium. Everyone commented positively about the seamless dome, the newly installed seating, and the updated hardware.

**Hawaii Space Lecture Series**: This month's lecture is scheduled for Tuesday, Jan. 22, 2013. Dr. Patricia Doyle will discuss early solar system processes. You can contact NASA PRPDC at 808-956-3132 or go to http://www.higp.hawaii.edu/prpdc for more information. Regular lectures usually take place at the NASA Pacific Regional Planetary Data Center, room 544 in the Pacific Ocean Science and Technology (POST) Building on the Manoa campus of the University of Hawaii.

**Space Missions**: ***Chris Peterson*** led a discussion of the current astronomy-related missions, the number of possible earth-sized planets within the Milky Way, and planets that may be situated in the "habitable zone" of extra-solar systems.

**Generalities**: ***Jim MacDonald*** has placed an order for shirts and will inform the membership when they arrive. Jim further informed the assembly that he has additional 2013 calendars for sale ($6.50) should anyone be looking to purchase one or more of these gorgeous sets.

**Proposed H.A.S. Swap Meet**: It was the general consensus of those assembled that we will consider an H.A.S. astronomy swap meet for either April or May of this year. Further discussion will take place in the coming months.

**Look Out:** We are awaiting the arrival of a near-Earth asteroid to slide past Earth around February 15 of this year. It should come within 14,000 to 18,000 miles of Earth. That is within the flight lines of Earth's geosynchronous satellites.

**Star Party Reports**: ***John Gallagher*** reported that there will be a school star party held for Waikiki Elementary on the evening of Friday, January 18, 2013. John requested help and sent around a sign-up sheet.

***Leslie Galloway*** reported that the January 5th star party at Dillingham Airfield was a real blow out, literally. With 40 mile per hour winds, Leslie and Peter made sure the airfield was clear of astronomy enthusiasts.

**Globe-at-Night:** ***John Gallagher*** also reported that this year there will be more than one month of observation for the Globe-at-Night event. This month, from Jan. 3-12, observers should count the number of naked-eye visible stars in the constellation of Orion and report them to the Globe-at-Night website.

**Visitors**: We had four visitors at this month's meeting.

**The Night Skies:** ***Joanne Bogan*** led assembled members and friends on a glorious ride across the Hawaiian skies through the use of the newly refurbished Planetarium equipment. The Goto Chronos II and Digistar System IV produced lovely images and enthralled everyone. Joanne is having a wonderful time learning the ins and outs of her new systems. We thank her for her joy in the night skies and her "joie de vivre!" Go Joanne!!!

As there was no further business, the meeting was adjourned at 9:40 p.m. Members enjoyed refreshments after the meeting.

Respectfully Submitted,
Gretchen West

## *Night Sky Network Astronomy Events Calendar*

List View Past Events < February 2013 > Upcoming Events

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| 27 | 28 | 29 | 30 | 31 | 26 events: Click here to view 1 | 27 events: Click here to view 2 |
| 9 events: Click here to view 3  | 4 events: Click here to view 4 | 11 events: Click here to view 5 | 9 events: Click here to view 6 | 15 events: Click here to view 7 | 26 events: Click here to view 8 | 33 events: Click here to view 9 |
| 7 events: Click here to view 10  | 4 events: Click here to view 11 | 13 events: Click here to view 12 | 13 events: Click here to view 13 | 5 events: Click here to view 14 | 25 events: Click here to view 15 | 27 events: Click here to view 16 |
| 7 events: Click here to view 17  | Washington's Birthday 18 | 14 events: Click here to view 19 | 7 events: Click here to view 20 | 8 events: Click here to view 21 | 15 events: Click here to view 22 | 21 events: Click here to view 23 |
| 3 events: Click here to view 24 | 6:30 PM BASWA Cosmic Neighborhood (OK) 25  | 10 events: Click here to view 26 | 5 events: Click here to view 27 | 5 events: Click here to view 28 | 1 | 2 |

## *Star Party Report* *by Sue Girard*

**3Dillingham Public Star Party - January 12, 2013**

The Public Star Party was a great success both with the weather and the enthusiastic crowd of visitors. We had about 35 folks who showed up at Dillingham. The sky was clear but there was a fair amount of haze, resulting in views that were not the best. Gretchen pointed out the Zodiacal light in the West, which was quite noticeable.

Most of the visitors were there as a result of Gary Ward's Pizzagram message and we had folks from Ohio, Tennessee, and Rhode Island! Some folks had never seen the sky from as far south as Hawaii's attitude and reveled in the view. Jupiter, of course, held center stage not disappointing the first-timers. We showed them all the favorites and they got to see a few bright meteors and satellites, too. Most visitors left about 8:30pm and the rest of us stayed until 10:30pm when the dew started taking over the scopes. All in all, a very enjoyable evening!

*Sue*

*(Space Place continued from page 4)*

Spitzer's Infrared Array Camera (IRAC), for example, is a four-channel camera, meaning that it has four different detector arrays, each measuring light at one particular wavelength. Each image from each detector array resembles a grayscale image, because the entire detector array is responding to only one wavelength of light. However, the relative brightness will vary across the array.

So, starting with one detector array, the first step is to determine what is the brightest thing and the darkest thing in the image. Software is used to pick out this dynamic range and to re-compute the value of each pixel. This process produces a grey-scale image. At the end of this process, for Spitzer, we will have four grayscale images, one for each for the four IRAC detectors.

Matter of different temperatures emit different wavelengths of light. A cool object emits longer wavelengths (lower energies) of light than a warmer object. So, for each scene, we will see four grayscale images, each of them different.

Normally, the three primary colors are assigned to these gray-scale images based on the order they appear in the spectrum, with blue assigned to the shortest wavelength, and red to the longest. In the case of Spitzer, with four wavelengths to represent, a secondary color is chosen, such as yellow. So images that combine all four of the IRAC's infrared detectors are remapped into red, yellow, green, and blue wavelengths in the visible part of the spectrum.

Download a new Spitzer poster of the center of the Milky Way. On the back is a more complete and colorfully-illustrated explanation of the "art of space imagery." Go to **spaceplace.nasa.gov/ posters/#milky-way.** ☆

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

*(ODE continued from page 3)*

*It was clouds and rain - then one night, surprise*
*Pristine skies till the full moon arose and ruined our sky.*

*But defeated we're not; a hardy lot*
*We still can enjoy and learn to spot*
*Many celestial objects with binocs as a start.*
*And at star parties now, we look thru other scopes*
*Keeping in mind with unabated hopes*
*That we'll be able to use our Litebox one day*
*When Barry discovers materials "lite" enough for olders to use*
*And we'll call it The Very, Very Lite, Litebox!*
*Now that will be good news...*

*Mel*

HAS Club Members at the Jan. 8, 2013 meeting/New Year potluck dinner. Because of the aspect of the photo, the size is limited in this format. Check out our FACEBOOK page for a larger view. *Photo courtesy: April Lew*

## Treasurer's Report

by Jim MacDonald

**HAS Financial Report for the month ending as of Jan. 15, 2013**

| | |
|---|---|
| **Initial Balance:** | **$4,532.45** |
| *Receipts:* | |
| Calendars | 6.50 |
| Donations | 55.00 |
| Dues Received | 342.00 |
| Postage Reimbursement | 5.75 |
| Polo Shirt Deposit | 97.94 |
| **Total Income:** | **$507.19** |
| *Expenses:* | |
| Astronews | 59.46 |
| Magazine Subscriptions | 68.00 |
| P.O. Box Rental | 120.00 |
| Postage | 13.42 |
| **Total Expenses:** | **$260.88** |
| **Final Balance** | **$4,778.76** |

The club gained one new member this month. He is ***Rankin Pang.*** A special thanks to ***Marilyn Michalski, Yoshiyuki Inoue, and John Sandor*** for their donations. Thank you to all renewing their yearend membership on time.

## <<Upcoming Star Parties>>

| | |
|---|---|
| **CLUB Party-Dillingham** | **Feb. 2** (MacDonald) |
| **Public Party-Dillingham** | **Feb. 9** (Galloway) |
| **Kahala/Ewa Party** | **Feb. 16** |

## ☆ ☆ Upcoming School Star Parties ☆ ☆

| | | |
|---|---|---|
| Fri. | **2/22** | Iolani School (McCully/Kapahulu) |
| Sat. | **3/23** | HPU Family Weekend (Kaneohe) |
| Thurs. | **3/28** | Hokulani Elementary (UH/St. Louis) |

*From the Editor: This is part of a continuing series contributed by Joseph E. Ciotti, Professor of Physics, Astronomy & Mathematics/ Director of the Center for Aerospace Education, Windward Community College, University of Hawai'i*

**This article originally appeared in The Hawaiian Journal of History, Vol. 45, 2011**

**NECESSITY—THE MOTHER OF INTERVENTION (cont.)**

The answer rests with a combination of unrelated circumstances occurring soon after Hawai'i became a state in August 1959. At that time, one out of every twelve people employed in Hawai'i was in the sugarcane cultivation and processing industry. Statehood, however, brought with it the prospects of significantly increasing labor costs, which sharply contrasted with the cheaper labor found elsewhere in the Caribbean. Although sugar would continue to dominate the Hawaiian economy for another decade, leaders already sensed the impending demise of this once staple industry.

Just past one a.m. on May 23, 1960 and not quite one year into statehood, the Big Island of Hawai'i was dealt a devastating blow. Triggered by a major earthquake in Chile, the third and largest swell of a tsunami estimated at 35 feet high inundated the island's major city of Hilo—killing 61 people in its wake and destroying the waterfront businesses along the city's expansive bay. Necessity prompted the Hawai'i Island Chamber of Commerce to intervene, searching for ways to pump up the island's failing economy.

Mitsuo Akiya, the Chamber's Executive Secretary, coincidentally learned of Kuiper's interest in Haleakalā and successfully persuaded him to consider Mauna Kea instead. Soon afterwards, then-Governor John Burns released funds to bulldoze an access road to its summit. Test observations verified that Mauna Kea was a superb site for an astronomical observatory. In Kuiper's own words, the mountaintop was "a jewel … probably the best site in the world." 4 His enthusiastic pronouncement has since stood the test of time.

## LOCATION-LOCATION-LOCATION

Energized by the race to the moon in the early 1960s, astronomy and space exploration enjoyed favored status throughout the United States. Despite its as-yet unproven record in astronomical research, the University of Hawai'i (UH) was awarded funds from the National Aeronautics and Space Administration (NASA) to build a world-class observatory to be coupled with an expanded graduate program in astronomy and a research branch, called the Institute for Astronomy (IfA).

When this author arrived at the University of Hawai'i in 1967 to begin graduate studies in astronomy, construction of this observatory was newly underway. Severe weather conditions and technical problems, however, delayed its dedication until 1970. Once in operation, the UH's 88-inch (2.2-m) telescope became the eighth largest in the world and the first to be fully computer-controlled. Word of the outstanding seeing conditions at this tropical peak spread quickly throughout the astronomical community.

By 1979, three larger internationally managed telescopes, along with two smaller 0.6-meter instruments, were operating at the summit. These included the 3.8-m United Kingdom Infra-Red Telescope, the 3.6-m Canada-France-Hawai'i Telescope, and the 3.0-m NASA Infrared Telescope Facility. Mauna Kea was on the fast track to becoming the world's finest location for astronomical observations.

During the 1980s, there existed little vocal opposition to these modern sentinels on the mountain. The directors of Hilo's Joint Astronomy Centre were well-respected and viewed as community-oriented.5 The most derogatory comments at that time were references to visual eyesores: "pimples on the mountain." These were only vague hints of the impending controversy that was still to come.

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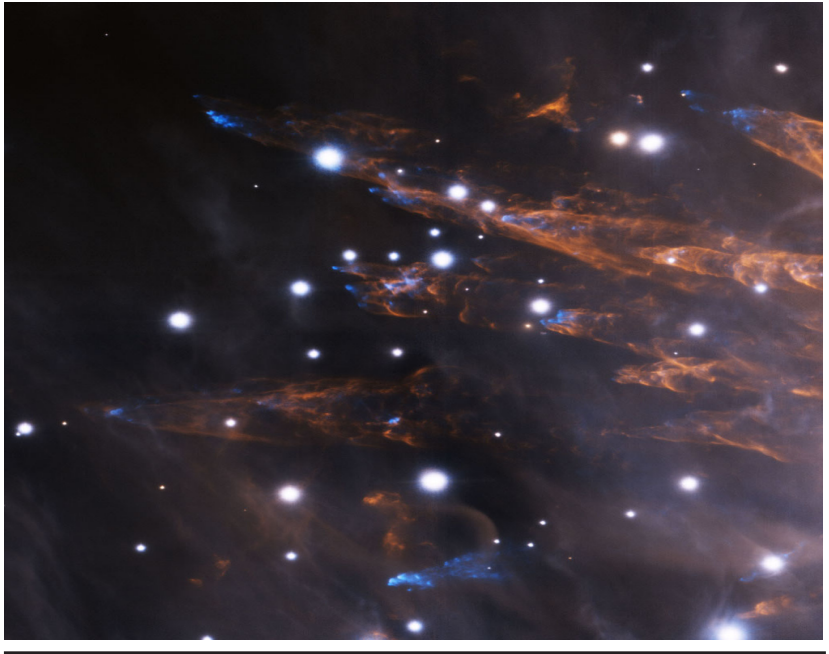

The "bullets" region of the Orion Nebula imaged by the next-generation adaptive optics system GeMS on the Gemini South Telescope located atop Cerro Pachón, Chile.

*Image courtesy:* ***Gemini Observatory/AURA***