THE APPULSE
Official Newsletter of the Philippine Astronomical Society
PROPELLING ASTRONOMY EDUCATION TOWARD THE ACHIEVEMENT OF SCIENTIFIC EXCELLENCE AMONG FILIPINOS
Vol. 41 No. 62 June 2009

OFF GOES PAS TO CHINA!

by Allen Yu

This year, for the first time in many years and as far as a living memory can serve, the Philippine Astronomical Society embarks on a historic eclipse expedition that is for the record books: This solar eclipse is the longest total solar eclipse that will occur in the twenty-first century and will not be surpassed in duration until June 13, 2132!

Totality will last for up to 6 minutes and 39 seconds, with the maximum eclipse occurring in the ocean at 02:35:21 UTC about 100 km south of the Bonin Islands, southeast of Japan. The North Iwo Jima island is the landmass with totality time closest to maximum. We chose China over other sites since this is the most practical way to organize this trip - China has the most economical accommodation available for foreign tours, and Shanghai and its vicinity are the longest eclipse duration available once the Moon's shadow enters the mainland. We will have 50/50 percent bouts with the weather, as monsoon season kicks in; but we plan to be mobile at best, to avoid the clouds and settle at the next best clear site within our reach.

I write in behalf of my experience as an amateur astronomer. Eclipse fascinates me, though I haven't seen a total one. Almost always, astronomy books regard it as the grandest spectacle of Mother Nature. It is a gifted experience to experience the overwhelming power of the Sun, blocked by the gigantic shadow of the Moon and feel how things has gone horribly wrong, turning day into night. A moving experience that is, that the magic of the sky will be gone in 5 minutes or so. If I have to end a hobby or my career in astronomy at a time God would tell me so, I would beg Him that I still want to see a Total Solar Eclipse. Muslims would be required to visit Mecca at least once in their life. In my case I waited 13 years for this. My father witnessed such way back 1955. Fate had served him well since that longest duration in history of mankind passed through our old Manila. Now the eclipse path is not that far, and I think it is worth the extra effort, resources, and time. This is the culmination of any astronomers' dream. And I encourage everybody to do so as well.

I managed to convince PAS that we will be bringing only one set of equipment - nothing fancy but just the traditional set-up to bring home several images: a motorized equatorial mount, DSLRs, an 80mm ED refractor, and last but not the least, PAS' Coronado Solarmax. We do not even need to be very technical; this eclipse would be the most observed eclipse in history, its path cutting across vast lands of very populous status.

Every scientific instrument would be there to be tested and document, and I'm sure there will be no lacking of scientific data pouring in. Major observatories like Shanghai Astronomical Observatory, for the first time, would be directly under the Moon's shadow. Let the big boys do their stuff, we will be there to do our small parts - to enjoy and observe. As advised to most 1st timers not to bring anything, just ourself, our eyes' protection, to feel and observe its entirety. We will be the silent but glorious spectators of God's play of light and shadow.

June 9 confirmed the participation of 7 Quezon City Science High School teachers and students. Along with Mr. Maximo Sacro, who is the most veteran eclipse wit-

ness and probably to be designated as our expedition head, I have 5 friends from all walks of life joining us, serving the minimum number of 15 to make the package complete. Of course, we welcome would-be participants and urge the rest to make up their minds fast, as slots for plane ticket are

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MEET THE EDITORIAL STAFF

by Victoria Evarretta

They work weekends, late nights, take time from personal schedules, beat deadlines - all carried out by two or three or four Appulse Editorial staffers - to come up with the monthly Appulse issue.

No easy task, but they work with a grin and a furrowed eyebrow beam sometimes. Anyway, for those who are new or are infrequently attending PAS monthly meetings, it helps to know and meet these guys behind the Appulse scene. And here they are:

EDNA AZUCENA - Editorial Adviser

Edna has been the PAS President for the past three years, a Board Director for several years , and a member of the Philippine Astronomical Society since 1994. A quiet, demure, and soft-spoken Ilongga, she hails from Iloilo; but she has moved and relocated to Marikina City with her family in 1986.

One of the PAS icons who has unconditionally and loyally served the Society for many years, Edna graduated from University of San Agustin at Iloilo with a Bachelor's Degree in Chemical Engineering and another Bachelor's Degree in Education. She's now working on her thesis for her MA in Management and Evaluation at the University of the Philippines, Diliman.

She just retired last June 5 from POVEDA where she worked for 18 years first as a classroom teacher, then as a Science Coordinator, and finally at the Research office. Since 1998, she was also the Area Editor in Chemistry of Vibal Publishing House's Science and Technology Digest. In addition, she was Education Program Specialist II of the Division of City Schools Manila from 1971 to1992.

Besides astronomy, Edna loves to read and write and to travel to and from Iloilo to be in constant touch with her Ilonggo classmates, friends, and family.

Contact number - 0916-467-6153.

JAKE IRLANDEZ - Layout Editor

Jake has been a very active PAS member and Board Director since 2007. "Ang bait daw" and an all-around help - rather a strong post for the Society.

Married with two kids, his family and career are no hitch to his ever ready help and support for PAS despite his residence at Marulas, Valenzuela City, Bulacan.

Jake is a mechanical engineer by profession. He finished his BS Mechanical Engineering from Mapua Institute of Technology in 1999. He is presently connected with Nalco Philippines, Inc. as the Application Engineer in which his job takes him to far-flung provinces to supervise mechanical repairs and maintenance of big plant machines and equipments. Specifically thus, he is on 24-hours on-call duty to supervise, monitor, troubleshoot, and optimize mill chemical trials and to conduct laboratory works and simulations to screen a cost and effective program that fits in with the machine operation.

Besides astronomy, his interests are in sports and his family.

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MARNELLI ATIENZA - Layout Editor

Marnelli used to have the perfect attendance in PAS meetings, activities, OOTOS and has always been a guaranteed volunteer and help in stargazings. No meeting or activity is complete without her. She has been with the Board since 2004.

But all these changed as soon as she became a Call Center worker in Makati. (Prior to this job, she worked as a dental assistant in her aunt's dental clinic at Quezon City.) We hardly see her nowadays; thus, her presence and company are scarce and have been missed.

Nelli is a dentistry student on leave from Centro Escolar University. She's a fun-loving lady who loves the outdoors, PAS, and her cats.

Contact number - 0908-508-5449

VICTORIA EVARRETTA - Editor-in-Chief

Vicky lives in Tuguegarao, but she comes to Manila every month in time for the PAS meetings.

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THE **APPULSE**

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THE ASTEROID GALLIA OCCULTATION PROJECT (Second of a Series)

Because the Moon moves so fast and is large, it produces the most occultations. The planets, moving more slowly and appearing much smaller, rarely occult any stars bright enough to observe visually. Asteroids are even smaller than the planets; ut because there are thousands of them, asteroidal occultations are almost common.

More than any other type of occultation, asteroidal occultations provide the most uncertainty. The positions of the asteroids (and formerly the stars) are not known accurately enough to make detailed predictions about where an occultation will occur.

Often, only a general path can be predicted. With enough observers spread across the predicted path, then the asteroid's shadow can be captured! Imagine watching, and waiting, and suddenly the target star disappears: covered by the faint and sometimes invisible asteroid. A few seconds later, the star reappears from behind the asteroid. (With today's CCD cameras and observing programs to measure the positions of the asteroids, updates a few weeks or days before the event can often update the path to within a fraction of the predicted width. Although more precise, the uncertainty still makes the asteroidal occultations an exciting and frustrating event!)*

Asteroid Gallia will be the subject of an occultation project study this coming September 30, 2010. The occultation project is an attempt to map the size and shape of asteroid Gallia as it occults a 3.5 magnitude star located at R.A. 8h55m23s, Dec. +05deg 56m44s.

It is a year away, but planning and preparations are underway to ensure the success of this cooperative project between the NASA Johnson Space Center Astronomical Society in Houston and the Philippine Astronomical Society.

The study sites for the predicted path of Asteroid Gallia have been determined to be postioned between 98-km intervals from Nueva Vizcaya to Isabela provinces (see star chart; http://www.asteroidoccultation.com/2010_09/0930_148_21305.htm).

PAS has started contacting volunteer members for the team to assist the NASA observers headed by Paul Maley and to possibly conduct the occultation studies on their own.

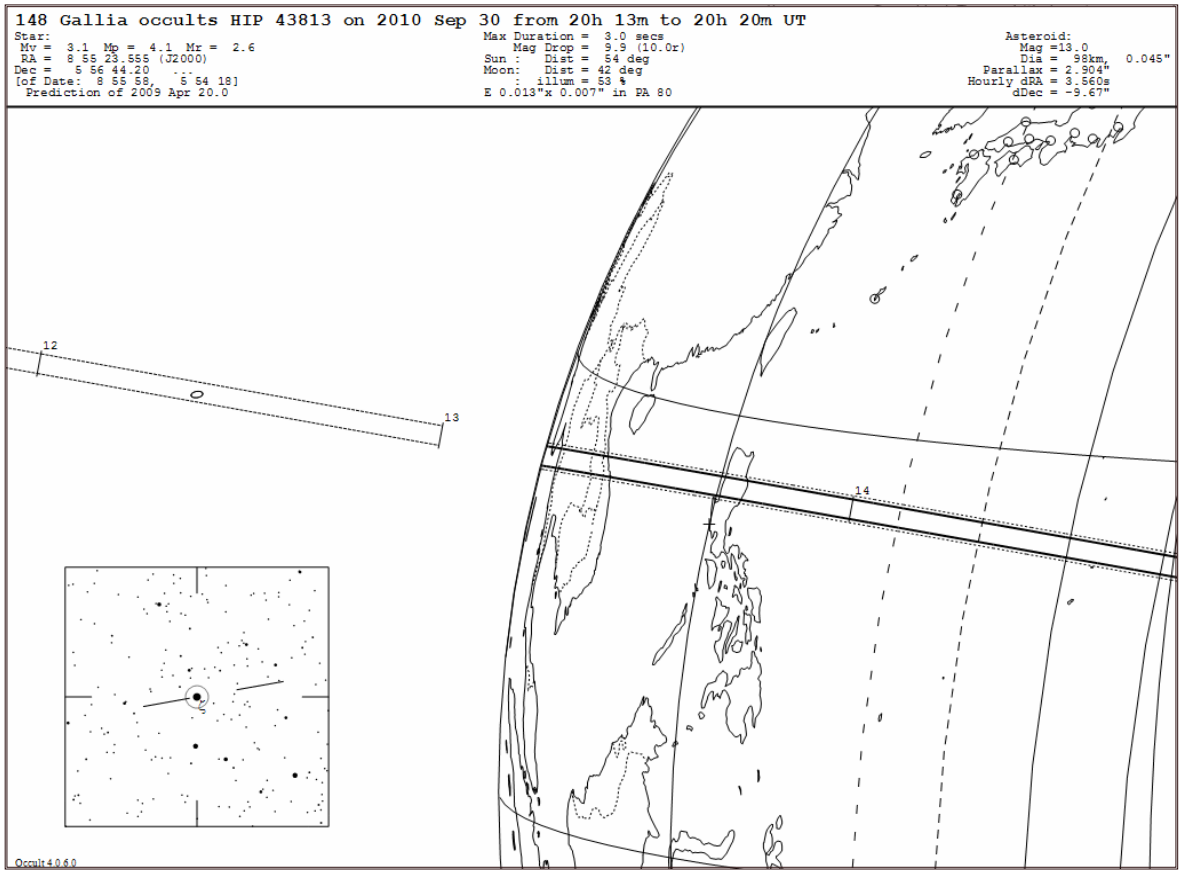
Note that this project is OPEN to everyone interested, especially those competent in occultation studies and those who have the equipments needed (GPS, video camera, telescope) and willing to be trained. PAS welcomes the participation of the following observers:

1. Competent observers WITH telescope, timing source and recording device who can observe without any assistance.

2. Competent observers with telescope but WITHOUT timing/recording devices who can observe without any assistance. Note that without timing/recording devices, the observations cannot be used!

3. Novice observers who must be trained prior to the occultation but have a telescope, timing source, and recording device.

An ocular survey of the predetermined sites has been scheduled for this month of June, but due to the low-pressure areas striking Northern Luzon and the consequent non-stop rains lately, the survey has been re-



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THE STARDUST OBSERVATORY

Located in Baguio, John Nassr's rooftop home observatory is dedicated to the pursuit of astronomy. Its name, Stardust Observatory, is in recognition of the recycled interstellar material that the Earth and all its sentient, inventive, self-reflective inhabitants are made of (per John).

The astroimages that have for years graced our PAS Forum, website, and Appulse issues all come from this observatory. Through this and through John's extraordinary superb talent and skill in astrophotography, John has eloquently captured the timeless beauty of the outer space never seen before in Philippine astrophotography collections. Staying up late nights in succession, he has patiently and painstakingly chronicled most if not all deep-sky objects, which he unselfishly shares with PAS, the community, and the world through his website *www.stardustobservatory.org*

The Stardust Observatory

DBK21 webcam on C-14 for high resolution planet imaging

Astrophysics 5 inch f8 Starfire, Borg 77ED f4.3, Titan mount, STV autoguider, Atik 16HR camera

Celestron C90

ST10XME with AO8 adaptive optics on C14

Borg 77ED f4.3 with helical focuser and ATK16HR

ASTROPHOTOGRAPHY

by John Nassr

I could not find images of NGC 5084 and therefore decided to photograph it out of curiosity and see what it looks like. The edge on galaxy in Virgo near the boarder of Hydra and Corvus glows at magnitude 12 and is accompanied by fainter background galaxies, the two brightest of which are ESO576-31 and ESO576-40 at magnitudes 14 and 14.6 respectively. Here is what 3.8 hours worth of exposures revealed.

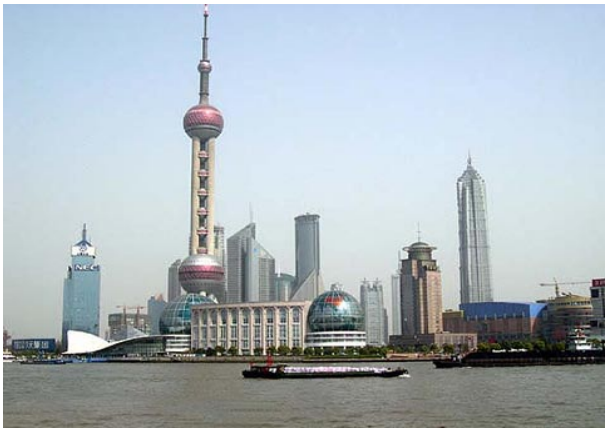
Date Imaged: May 23 - 28, 2009
Lens: Astrophysics 5" f/8 Starfire
Camera: ST10XME
Exposure: 3.8 hours
Filter: Astrodon LRGB
14,3,3,3 x 10minutes
Mount: Losmandy, Titan
Location: Stardust Observatory, Baguio, Philippines

Driven by hunger to image after a long respite, I stayed up till 1:00 in the morning and was happy to see and image an old friend grand as ever rising through mist and clouds.

Date Imaged: June 16, 2009
Lens: C-14 f/27
Camera: DBK21
Exposure: 45 secondsFilterRGB
Mount: Losmandy Titan
Location: Stardust Observatory, Baguio, Philippines

Off goes... *from page 1*

limited. There is danger of being shut-out. I encourage everybody to please confirm on or before June 30, other than that I can never be sure of your chances.



Please find here the itinerary for the trip. There will be adjustments, as I urged the travel agency to make the trip more scientifically inclined. But the side tours are important too to fill gaps of satisfaction in case, just in case, we are not so lucky :) Some adjustments would be riding the Maglev train and climbing up t o the observation deck of Shanghai World Financial Center, the 3rd tallest building in the world after Burj Dubai and Taipei 101.

Date	CITY	Itinerary	Meal
DAY 1 Jul 20	Manila Shanghai Suzhou	Pick up in Shanghai, coach to Suzhou, Visit Golden Cock River, After dinner check in hotel	D
DAY 2 Jul21	Air/bus Suzhou Jiaxing Bus	Tiger Hill, Hanshan Temple, Silk Factory, coach to Jiaxing, Jiaxhing Nan Lake, check in hotel	BLD
DAY 3 Jul 22	Jiaxing Hangzhou bus	Watch Eclipse in Jiaxing, afterwards coach to Hangzhou, boat cruise West Lake	BLD
DAY 4 Jul23	Hangzhou Shanghai Bus	Yuefei Temple, coach to Shanghai, Oriental Pearl TV Tower, The Bund, Nanjing Road, Xintiandi Bar street	BLD
DAY 5 Jul24	Shanghai Manila Air	Fly to Manila	B

4-star hotels: Shanghai: Express by Holiday Inn; Jiaxing: Diamond Hotel; Hangzhou: Zheijiang New Century Hotel.

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Meet the... *from page 1*

A PAS member since 2004, she has also served in the PAS Board and in the Ways and Means and Publication Committees (raised funds from dollar-earners abroad).

She graduated from University of the Philippines in Diliman with a Science Degree in Zoology (purposely to take up Medicine but fate intervened) and has taken some postgraduate courses from same university.

First worked at the Philippine Atomic Energy Commission as a Scientist, then at the Provincial Government of Cagayan as Curator of the Cagayan Museum and Historical Research Center, and as production editor for medical journals and books at several publishing companies in Manhattan, New York from 1985 to 2000. Her last stint was as a senior book production editor at Springer-Verlag at Fifth Avenue, Manhattan. (She was also concurrent Editor of Cagayan News, Provincial Information Officer, and Museum Curator before she immigrated to New York in 1985.)

Vicky's interests are multi-varied and range from A to Z; thus, she's a jack of all trades and master of none (A- anthropology, archaeology, astronomy, arts, etc; B- botany, baking; C - cooking, cats; D – dogs, documentaries, etc.) She's into travel, gardening, pets, tennis, swimming, and music - playing some musical instruments.

Contact number - 0916-468-8141

Asteroid... *from page 3*

scheduled for some other time.

Those interested to join this study group, please contact Engr. Camilo Dacanay at 09084338977. Project details including dates for simulation experiment and training will be announced as info and schedules become available and confirmed for circulation.

*Source: Occultations and Transits Special Interest Group; Paul Maley

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Astronomy Update

An elusive supernova explosion, detectable only in radio wavelengths, was discovered last month in the nearby galaxy M82.

The object, dubbed SN 2008iz, is the closest supernova discovered by scientists in the past five years. It would have been visible even to amateur telescopes, were it not for the dense gas and dust surrounding the exploding star, which left it invisible in every part of the spectrum except the radio wavelengths.

The supernova's home galaxy, M82, is an irregular galaxy in a nearby galaxy group located 12 million light-years from Earth.

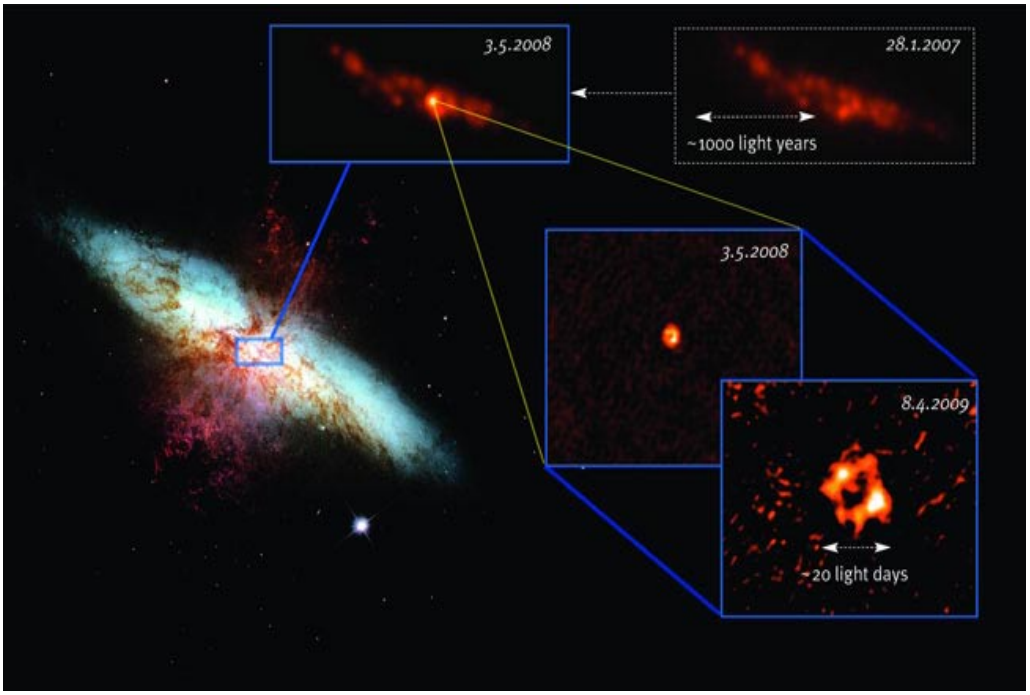
Despite being smaller than the Milky Way, it harbors a vigorous central starburst in the inner few hundred light-years. In this stellar factory more stars are presently born than in the entire Milky Way.

M82 is often called an "exploding galaxy," because it looks as if being torn apart in optical and infrared images as the result of numerous supernova explosions from massive stars. Many remnants from previous supernovas are seen in radio images of M82, and a new supernova explosion was long overdue.

Astronomers have been waiting to catch the next big blast for more than 25 years and had started to wonder why the galaxy has been so silent in recent years. In the end, it took a little digging and looking in the right wavelengths.

The new discovery was first made when Andreas Brunthaler of the Max-Planck-Institut fur Radioastronomie in Bonn, Germany, examined data from April 8 with the Very Large Array (VLA) of the National Radio Astronomy Observatory, an interferometer of 27 identical 25-meter telescopes in New Mexico.

"I then looked back into older data we had from March and May last year, and there it was as well, outshining the entire galaxy!" Brunthaler said.



This image, taken with the Hubble Space Telescope, shows the body of M82 in blue and hydrogen gas breaking out from the central starburst in red. The VLA image (top left) clearly shows the supernova (SN 2008iz), taken in May 2008. The high-resolution VLBI images (lower right) shows an expanding shell at the scale of a few light days and proves the transient source as the result of a supernova explosion in M82. Credit: Milde Science Communication, NASA, ESA, and The Hubble Heritage Team (STScI/AURA), A. Brunthaler, MPIfR

Radio emission can be detected only from core collapse supernovas, where the core of a massive star collapses and produces a black hole or a neutron star. It is produced when the shock wave of the explosion propagates into dense material surrounding the star, usually material that was shed from the massive progenitor star before it exploded.

But observations of M82 taken last year with optical telescopes to search for new supernovas showed no signs of this explosion. The supernova is also hidden on ultraviolet and X-ray images.
The supernova exploded close to the center of the galaxy in a very dense interstellar environment, which could explain why M82 has been silent for so long: many of these events may actually be something like "underground explosions," where the bright flash of light is covered under huge clouds of gas and dust and only radio waves can penetrate this dense material.
"This cosmic catastrophe shows that using our radio telescopes we have a front-row seat to observe the otherwise hidden universe," said Heino Falcke of the University of Nijmegen/ASTRON.

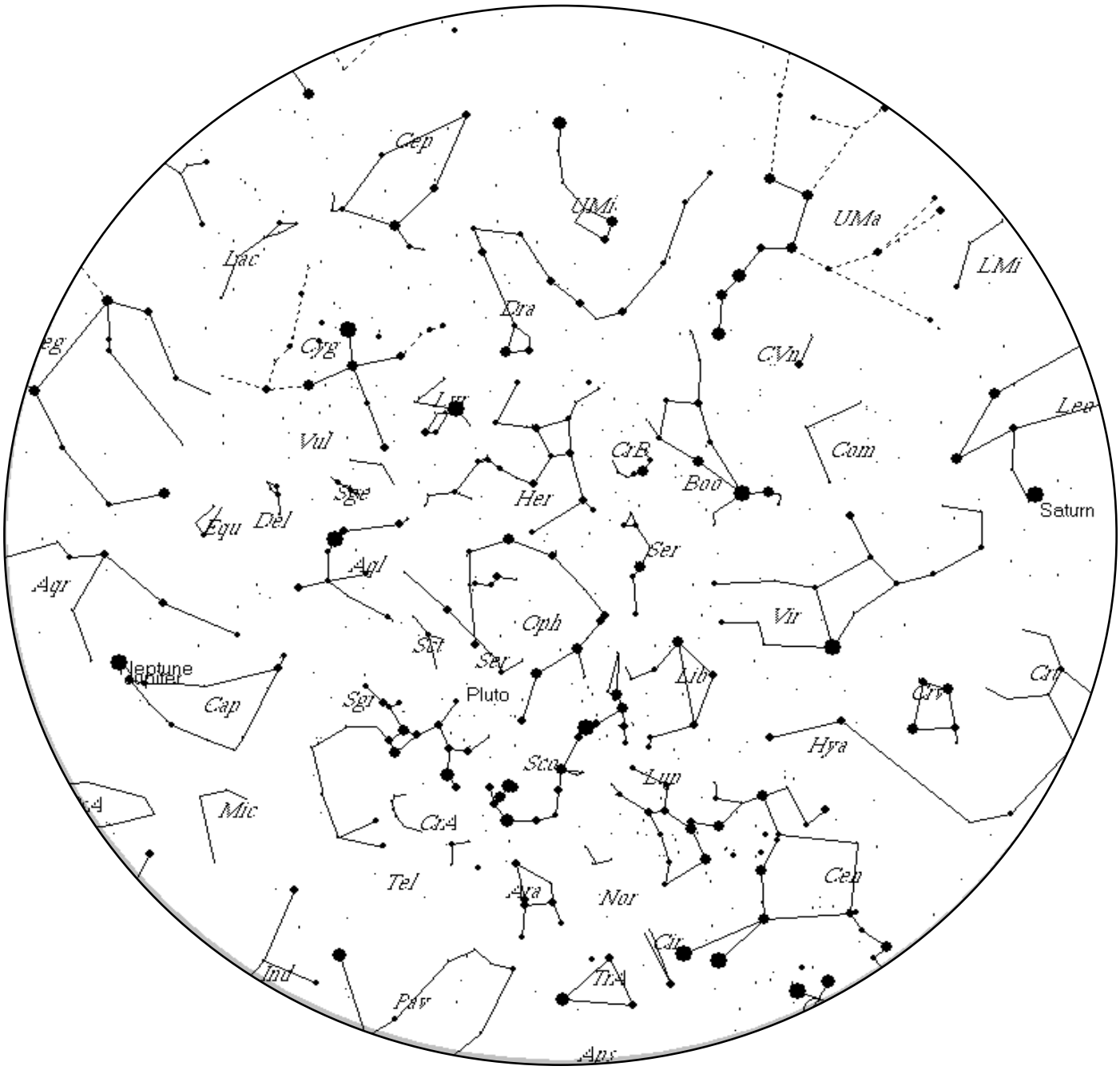
By combining data from the 10 telescopes of the Very Long Baseline Array (VLBA), the VLA, the Green Bank Telescope in the USA, and the Effelsberg 100-meter telescope in Germany, using the technique of Very Long Baseline Interferometry (VLBI), the team was able to produce images that show a ring-like structure expanding at more than 40 million km/h or 4 percent of the speed of light, typical for supernovae.

The team estimates that the supernova exploded in late January or early February 2008. Only three months after the explosion, the ring was already 650 times larger than Earth's orbit around the sun.

The discovery will be detailed an upcoming issue of the journal Astronomy & Astrophysics Letters

http://www.space.com/scienceastronomy/090527-radio-supernova.html

Monthly Star Map – July 2009



This map shows the sky at 9pm on July 15, 2009 as seen from the latitude of Metro Manila, Philippines with North on top and the zenith at the center. The large circle represents the horizon. Star limiting magnitude is 5.5. Deep sky limiting magnitude is 7.0.

Prepared by PAS Observation Committee using SkyMap Pro 9 software.