



THE APPULSE

Official Newsletter of the Philippine Astronomical Society

PROPELLING ASTRONOMY EDUCATION TOWARD THE ACHIEVEMENT OF SCIENTIFIC EXCELLENCE AMONG FILIPINOS

Vol. 40 No. 51

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PAS MONTHLY MEETING, MAY 2008: BACALZO & OLOVEROS, STARTS UP WITH A LECTURE

Two new members of Philippine Astronomical Society gets their initiation with a lecture last May 18, 2008 during the monthly meeting held in Rizal Technological University, Boni Ave., Mandaluyong City.

Nikita Bacalzo Jr. and Julian Maverick Oliveros are both senior students of Quezon City Science High School. They joined the Society last February, during the celebration of the National Astronomy

Week 2008.

Oliveros discussed the topic “A Journey from the Past: A Walk through the Origin of the Universe”. He presented the different ideas of the origin of the universe; the different scientifically based and accepted theory about the beginning of the universe.

Bacalzo, on the other hand, discussed the topic “Point of Singularity”, a topic about blackhole. He presented the lecture with a brief introduction about the stages of life of a star, the physics of blackholes, and different ways of identifying the existence of a blackhole.

After the lecture, Engr. Dacanay adds up information about the topics discussed. Likewise, Hoshea Jonathan Felix, a PAS member, gave his insights on one of the ideas presented in the lecture.

Present during the meeting are Hernan M. Dizon, Edna Azucena, Lea Villalon, Camilo Dacanay, Kimberly King, Elizabeth King, Domici King, Hoshea Jonathan Felix, Dr. Jesus Torres, Gamaliel Torres, Ian Mark Allas, Julian Oliveros, Nikita Bacalzo and Khan Louise Tejada.

Erratum:

Apologies to Mr. John Nassr for his misspelled name on May issue.

Editorial Staff

June Celebrants

- 1 June Hayden B. Sinson
- 2 Mary Joy J. Marentes
- 4 Dylan Enrico P. Cadag
- 6 Jasmin C. Castillo
- 7 Stephanie I. Deligero
- 7 Edna Azucena
- 7 Kanlouise Nielsen P. Tejada
- 8 Stephanie Lorraine T. Yap
- 10 John L. Nassr
- 11 Gloria Servano
- 11 Alvin M. Balbuena
- 12 Juanito E. Bautista
- 13 Roy Gorge S. Borlongan
- 14 Vincent Patrick C. Chang
- 15 Joel C. Linao
- 15 Jose B. Ballatong
- 16 Hiyasmin T. Artates
- 16 Maria Siela B. Rodriguez
- 17 Alma Christina R. Salamanca
- 17 Larrimar E. Tia
- 18 Rommel R. Concepcion
- 21 Cristopher John D. David
- 21 Luisa J. Ramirez
- 23 Marnelli G. Atienza
- 24 Roxanne S. Ortouste
- 25 Ronaldo O. Dayto
- 25 June Kathleen C. Antonio
- 27 Ellen M. Estares
- 27 Julie Ann Gaspara D. Montes



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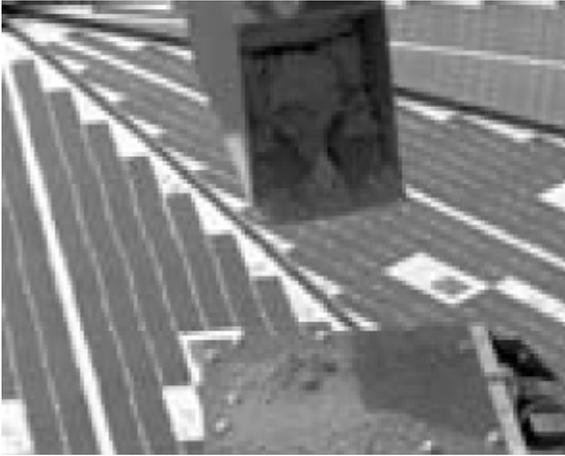
Letters, articles submissions, observations, of report can be sent to:

Email: appulse@philastrosoc.org
Website: www.philastrosoc.org

HAPPY FATHERS' DAY TO ALL ASTRO FATHERS!



MARS SOIL SAMPLE FINALLY DELIVERED TO PHOENIX INSTRUMENT



Scientists were finally able to deliver a soil sample to an instrument aboard NASA's Phoenix Mars Lander, after several frustrating days of failed attempts, mission controllers announced.

The welcome news came on Wednesday morning, when Phoenix beamed back the results of its activities from the previous day to scientists on Earth.

For the last several days, scientists had tried to dislodge the clumpy soil sitting on top of a screen that basically feeds samples into the ovens. The soil was stuck outside the instrument's entrance. The solution was to run a vibrator on the Thermal and Evolved-Gas Analyzer (TEGA), which is designed to heat up the soil samples to analyze their composition.

None of the dislodging attempts since the soil was first delivered on Saturday had been successful, but scientists ran the vibrator for a seventh (and likely final) time on Tuesday night "in the off chance we might get lucky," said TEGA co-investigator William Boynton of the University of Arizona.

"The dirt finally did start to flow and we actually got a full oven, so that problem is now behind us," Boynton added. "We're hopeful that some time in the next few days we'll close the oven and begin the analysis process."

When Boynton announced the unexpected result to the Phoenix team, "the group just went up into cheers,"

he said as he played the song "(Shake, Shake, Shake) Shake Your Booty."

TEGA's tiny ovens will heat the samples up to progressively higher temperatures. The first aim is to vaporize any ice that might be in the soil, which can be detected by the instrument mass spectrometer. At higher temperatures, other minerals may decompose into vapors as well, particularly any that formed in a wet environment.

"We're looking for past interactions with water," Boynton explained.

Just why the soil took such coaxing to get into TEGA is a mystery. The soil is unlike anything scientists expected to encounter, said Phoenix principal investigator Peter Smith, as it tends to clump together in little clods.

Scientists aren't sure what in the soil is causing this clumpy behavior — it could be a particular mineral, or, some speculate, water ice (which is thought to form layers just underneath the surface). Part of the reason ice is proposed as causing the clumps is that the ice could have sublimed after spending several days out in the Martian

sunshine, finally loosening the soil. Scientists got the news about TEGA after Phoenix was sent its commands for its next day, so they will return to it in the coming days. Phoenix will spend its next day on the red planet delivering a sample to its optical microscope.

After the problems encountered with dumping the soil into TEGA, mission scientists have devised a new method of sample delivery called "sprinkling." They will have the lander's robotic arm tilt its scoop, pushing the soil sample to the front. They will then switch on the scoop's rasp to vibrate and loosen soil, causing some of it to fall out in the instrument.

"It's kind of a salt-shaker mode if you like," Smith said. "We've practiced this before and we know it's going to work well."

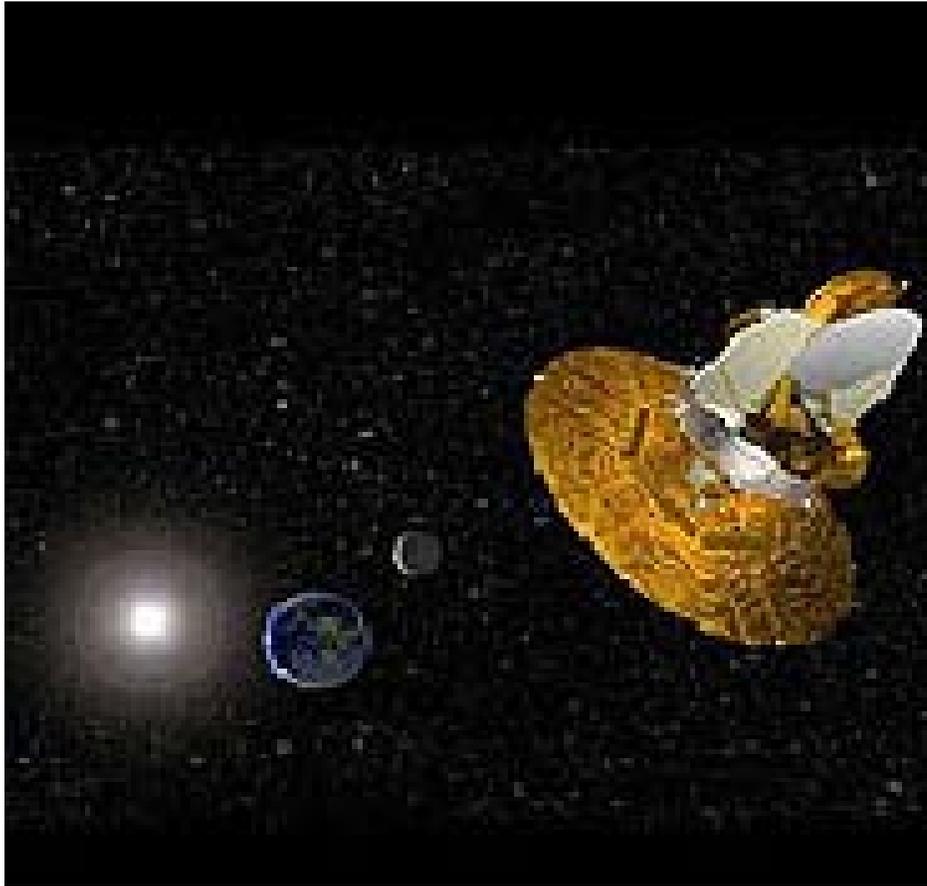
"Delivering the soil is something we're getting better at everyday," Smith added.

The first look at a soil sample through the microscope should come on Thursday. This close-up look at the soil should give scientists a better idea of just what is in the Martian regolith. Scientists back at the University of Arizona have been trying to mimic the sample in their lab, but "there's something missing in our mixtures here, and I'm quite anxious to find out what it is," Smith said.

By Andrea Thompson
Senior Writer

From: <http://www.space.com/misionlaunches/080611-phoenix-mission-update.html>

THE OLDEST LIGHT IN THE UNIVERSE



A NASA satellite has captured the sharpest-ever picture of the afterglow of the big bang. The image contains such stunning detail that it may be one of the most important scientific results of recent years. Scientists used NASA's Wilkinson Microwave Anisotropy Probe (WMAP) to capture the new cosmic portrait, which reveals the afterglow of the big bang, a.k.a. the cosmic microwave background. One of the biggest surprises revealed in the data is the first generation of stars to shine in the universe first ignited only 200 million years after the big bang, much earlier than many scientists had expected. In addition, the new portrait precisely pegs the age of the universe at 13.7 billion years,

with a remarkably small one percent margin of error. The WMAP team found that the big bang and Inflation theories continue to ring true.

The contents of the universe include 4 percent atoms (ordinary matter), 23 percent of an unknown type of dark matter, and 73 percent of a mysterious dark energy. The new measurements even shed light on the nature of the dark energy, which acts as a sort of anti-gravity. The light we see today, as the cosmic microwave background, has traveled over 13 billion years to reach us. Within this light are infinitesimal patterns that mark the seeds of what later grew into clusters of galaxies and the vast

structure we see all around us today. Patterns in the big bang afterglow were frozen in place only 380,000 years after the big bang, a number nailed down by this latest observation. These patterns are tiny temperature differences within this extraordinarily evenly dispersed microwave light bathing the universe, which now averages a frigid 2.73 degrees above absolute zero temperature. WMAP resolves slight temperature fluctuations, which vary by only millionths of a degree. Theories about the evolution of the universe make specific predictions about the extent of these temperature patterns. Like a detective, the WMAP team compared the unique 'fingerprint' of patterns imprinted on this ancient light with fingerprints predicted by various cosmic theories and found a match. WMAP will continue to observe the cosmic microwave background for an additional three years, and its data will reveal new insights into the theory of Inflation and the nature of the dark energy. WMAP is named in honor of David Wilkinson of Princeton University, a world-renowned cosmologist and WMAP team member who died in September 2002.

Fact Credit:

*NASA Goddard Space Flight Center
Goddard Space Flight Center Web Site*

ASTRO GALLERY

by John Nassr

Boattini 23 May 2008 Borg 77ED f5.5 ATK16HR RGB
6,6,4x1min binn
By: jnassr2000
Posted: May 23, 2008
Resolution: 800 x 597
Size: 21 KB



After waiting three weeks for the sky to clear I was finally able to hunt down and briefly image Comet Boattini C/2007 W1 before it set behind some trees in the south west. It took me just a few minutes to visually find it in the constellation Pyxis through an 8x50 finderscope. It glowed brightly at an estimated 5.8 magnitude even through a hazy sky lit up by city lights. The comet is quite large with a size of about 20 arc seconds. A full moon is 30 arc seconds for comparison. The emerald green comet is moving rapidly west south west at 2 degrees per day causing background stars to streak in this 16 minute exposure imaged with a Borg 77ED f5.5 refractor and Atik 16HR camera. Field of view is 51x65 arc seconds.

I wanted to see what a 5 inch refractor could do on a night of mediocre seeing. Here is the result. Comments are welcome!

Jupiter 8 June 08 16,22UT AP127 f40 DBK21 S4 T4 - Nassr
By: jnassr2000



Posted: Jun 7, 2008
Resolution: 325 x 288

Size: 7 KB

318 TIMES AS MASSIVE AS EARTH: PLANET JUPITER



What is 318 times more massive than Earth? Jupiter, the fifth planet from the Sun (next in line after Earth and Mars). Jupiter is the largest planet in our Solar System. If you decided to take a Boeing 777 for a trip around Jupiter, it would take you over 21 days just to circle once around its equator and that is without the refueling stops. However, if you ride with one of Jupiter's violent wind streams, which can blow as fast as 600 kph (372 mph), your trip can be as short as 13 days (it is still quite a trip!). If you ever do take an airplane for a trip around Jupiter, make sure to avoid the Great Red Spot (lower right corner of the image). The Great Red Spot is actually a tornado so big that it could hold two Earths and which has been

active for at least last 300 years! Jupiter got its name from the Roman God: Jupiter Optimus Maximus (all-good, all-powerful, the God of the Gods – Zeus is the Greek equivalent). Jupiter is mostly gas, about 90% Hydrogen and 10% Helium, with some traces of

methane, ammonia, water and rock. Its core is most likely solid rock, covered with a layer of liquid metallic hydrogen. Because the pressure close to the core is so great, hydrogen becomes liquid. Not only that, its protons and electrons get ionized – they start existing individually in this liquid (as opposed to being grouped into atoms). This hydrogen 'soup' is actually a conductor – that's why it is called metallic. Jupiter has 28 known moons, most of which are named after Zeus's lovers (Ganymede, Io, Europa, etc.)

From: <http://www.physlink.com/>
by Anton Skorucak and ScienceIQ.com

July Celebrants

- 1 Allen Yu
- 1 Jeffrey A. Lim
- 1 Hye Won Jang
- 2 Jose A. Fadul
- 3 Darryl Krizia N. Tan
- 5 Ella J. Dacian
- 5 Cecilia B. Eliquen
- 6 Dennis D. Pambid
- 6 David de Luna
- 6 Marie Angelina C. Gregorius
- 12 Epifania M. Batobato
- 14 Percival R. Calanasan
- 15 Carlota C. Diligan
- 17 Kristal T. Lim
- 17 Cherry Cheng
- 18 Camilo G. Dacanay
- 21 Kevin A. Dagonan
- 22 Normita R. Dalina
- 24 Felipe P. Briana
- 25 Raquel O. Sarte
- 30 Leah Villalon
- 31 Rose Siason



THE 1ST PHYSICS EDUCATION FESTIVAL

The theme of the 1st Physics Education Festival held at the Ateneo de Manila University last May 26-28, 2008 was "Overcoming Challenges in Physics Education." This was made possible by the efforts of the Department of Physics, Ateneo de Manila and the support of the DOST-SEI and PCASTRD.

The PAS Board Officers and Members we attended the opening and closing ceremonies upon the invitation of Dr. Perico Esguerra were: Engr. Camilo G. Dacanay, Jake Irlandez, Agnes Oclarit, Hernan Dizon and Edna P. Azucena.

One of the keynote speakers, Dr. Maria Victoria Carpio-Bernido, Principal, Central Visayas Institute Foundation, in Bohol, presented the FAPE Physics Essentials Project known as Learning Physics as One Nation.

She presented the framework of the Portfolio in Learning Physics which was implemented in their school.

According to her, the normal approach to teacher training is to conduct training, grant scholarships, conduct seminars and workshops to a pool of qualified teachers who later on migrated to greener pastures abroad. This situation leaves the teachers who have little background in physics where in only 27% of them are qualified to teach physics.

The FAPE Project experimented on implementing the Dynamic Learning Program with the following components:

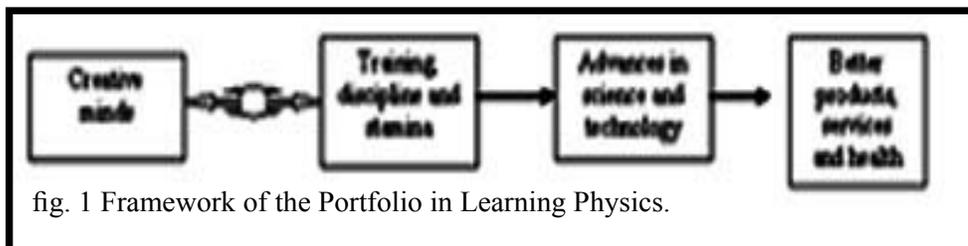


fig. 1 Framework of the Portfolio in Learning Physics.

1. Physics Essentials Portfolio. This consisted of Activity Sheets with Learning Targets 70% of which are curriculum based.
2. Physics Essentials VCD/DVD which consisted of 30% lecture and demonstrations
3. Feedback Mechanisms.
4. Regular Evaluations

The conceptual framework of this experimental teaching strategy is shown by these diagrams.

The traditional classroom teaching strategy shown by the diagram on the left and the innovative strategy is shown on the right. Seventy percent of the student activity plus 30% DVD and lectures of PhD experts in Physics was guaranteed to make the students learn Physics, according to the results of the study.

Other presentors were Dr. Vivien Talisayon, who presented the UP College of Education Efforts on Physics Education; Mr. Voltaire Mistades, who presented De La Salle University Efforts in Physics Education; Dr. Josefina Pabellon, NIS-MED Efforts in Physics Education.

Ms. Rohodora Ferrer presented a special topic on the CONSTEC Experience in Physics Education; Dr. Maricor Soriano, Physics and Art Authentication, and Mr. Nofel Lagrosas, Atmospheric.

The open forum on "Flesh and Blood: Daily Struggles in the Physics Classroom" was moderated by Dr. Perico Esguerra.

The Basic Courses offered the three day festival were as follows:

Basic Mechanics, conducted by Mr. Joel Tiu Maquiling of ADMU; Basic Optics, by Mr. Ivan Culaba, ADMU and Advance Mechanics by Dr. Jose Perico Esguerra, NIP, UP Diliman.

Workshops were held in different areas such as: Building and Programming a Wheeled Robot, by Mr. Nelio Altoveros, A Crash Course on Inquiry by Dr. Maricor Sociano, Wave Demonstration Using Improvised Ripple Tank, by Mr. Crismar Patacsil; and Ergonomics of a Computer Workstation by Engr. Erwin Daculan.

More special topics were presented by Mr. Crismar Patacsil on The Effect of the Shape of the Projectile and Investigation of Suggested Experimental Procedures and Apparatus in the Determination of the Index of Refraction of Liquid; Content Competency of HS Physics Teachers in La Trinidad Benguet by Ms. Brenda Bua-ay.

During the closing ceremony and the plenary sessions; Dr. Cynthia Celebre, presented the different projects for the International Year of Astronomy for the year 2009; Fr. McNamara, SJ presented the updates on the most recent technologies for earthquake detection, and Dr. Brawner presented the DOST-SEI efforts on Astronomy and Physics Education.

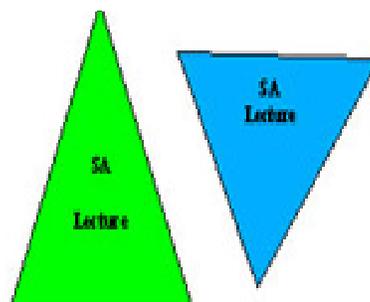
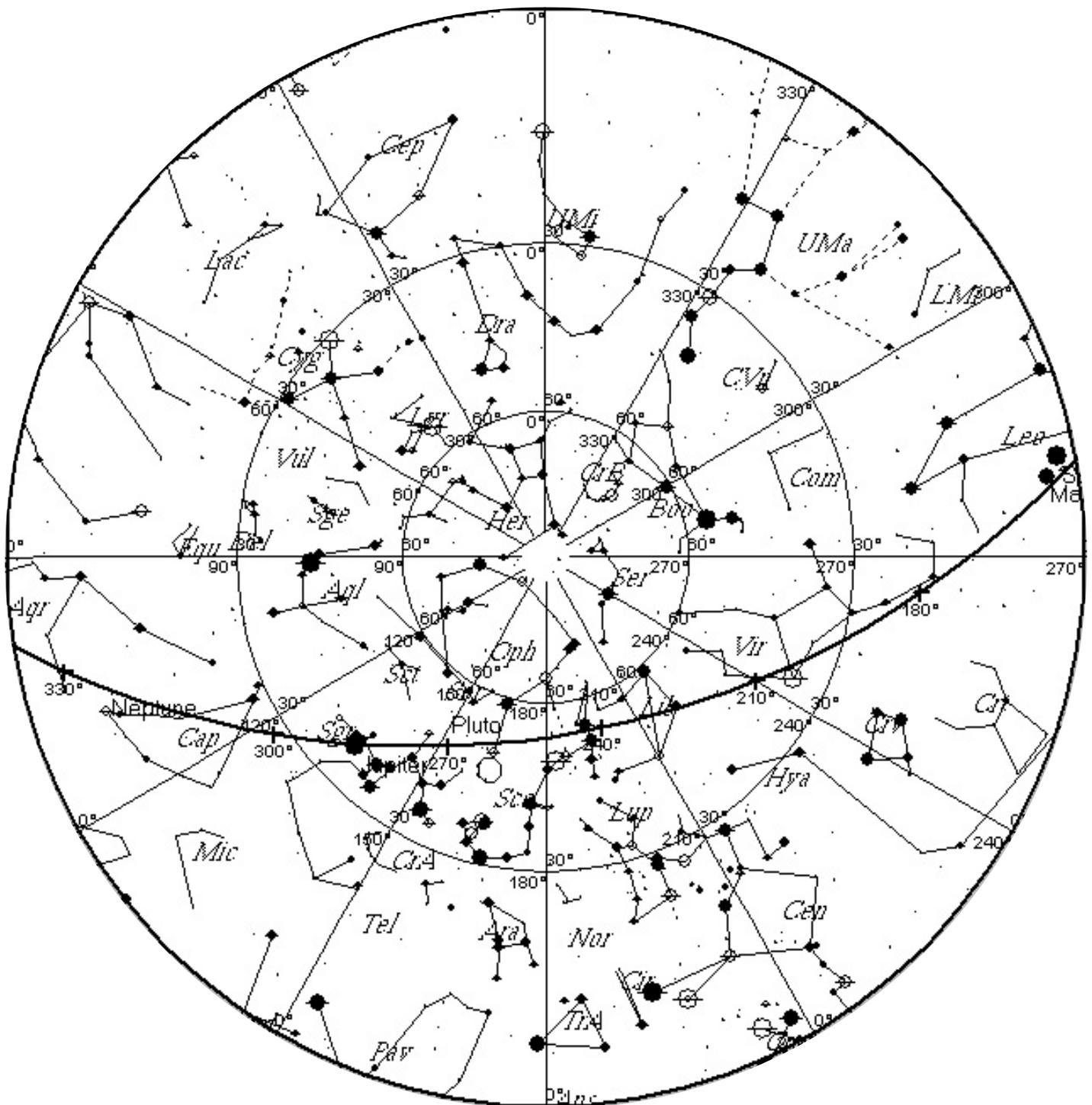


fig. A Traditional Classroom fig. B Innovative Classroom

Monthly Star Map – July 2008



This map was prepared by the Observation Committee of the Philippine Astronomical Society using SkyMap Pro 9 software.

This map shows the sky at 9pm on July 15, 2008 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.