

SIDEREAL TIMES

The Official Publication of the
Amateur Astronomers Association of Princeton

Director:

Rex Parker
(609) 730-0670
drexparker@aol.com

Assistant Director:

John Miller
(609) 252-1223
jmiller@princetonastronomy.org

Treasurer:

Ron Mittlstaedt
(609) 771-6981
C8User@aol.com

Secretary:

Mark Jaworsky
(609) 333-1130
MarkianSJ@comcast.net

Program Chairman:

Michele Novatski
(856) 810-7385
Philenium020202@yahoo.com

Editor:

Victor Belanger
(609) 448-8598
vic@apink.com

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From the Director

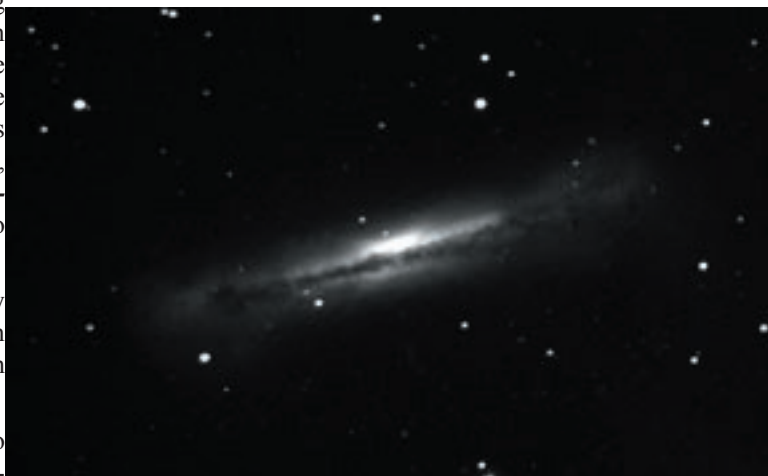
Feb. 8 AAAP Meeting The Space Elevator is coming to Princeton! You'll not want to miss our next meeting (Tues Feb 8 at 8:00 PM at Peyton Hall on the Princeton Campus). Following some remarkable talks the past two months on CCD design and cutting edge techniques to detect extrasolar planets, we will next turn our attention to recent developments in the Space Elevator concept. Program Chair Michele Novatski has invited **Michael J. Laine** of the **LiftPort Group**, Bremerton, WA, (<http://liftport.com>), who will present "**Space Elevator - Countdown to 2018**". For more information, please go to Michele's article later in this edition (and go to the website).

NOTE: Driving access to Peyton Hall has changed, with Ivy Lane no longer accessible from Washington Rd. Instead, turn (from Washington) onto Prospect Ave to Roper Ln to approach the Peyton Hall parking lots.

Winter Observing. How to avoid frost-bite while trying to get a view of deep sky objects during clear, but frigid, mid-winter nights? Many of our experienced observers can tell you their secrets of cold-weather observing, based on proper insulating layers. For me, CCD astronomy is the way to go. Once the telescope is setup and polar-aligned, and the hardware and imaging software are configured, my laptop-computer control of the camera allows repeated time exposure images to be captured while I run back into the warmth of the house! Okay, so I do still freeze in the process, but there is the advantage of lower ambient temperature to help cool the CCD chip! Below is an example of this type of observing (taken Feb 13, 2004 at 12 degrees temp.), resulting in an RGB image of NGC-3628, the remarkable edge-on galaxy with broad dark central band, in Leo near M65 and M66, about 35 million light years away and with visual magnitude of ~9.5.

Opportunities for AAAP members to get involved. Our vision for the continued future success of the AAAP centers on three major activities: (1) supporting and developing hands-on astronomical observing and imaging skills by members; (2)

sponsoring informative and interesting speaker programs with cutting-edge lectures by professional astronomers and other space-science experts; (3) providing a platform for public astronomy outreach and education in our community. To bring this vision to



NGC-3628 galaxy in Leo; photo by RAP using ST-10XME / Tak FS-128

life requires commitment and work by the members. We would benefit by increased involvement in several areas, for example the positions listed below:

- Program Committee: assistants to help develop programs with professional astronomers; also a coordinator for speaker dinners is needed.
- Nominations Committee: work with John Church and Don Monticello to identify candidates for the Board election in May.
- Membership Committee: assist Jane Lanahan, and get to know other members.
- Sidereal Times: assistant editor to work with Vic Belanger
- Website development: assistant to work with Webmaster John Miller
- Auditor: once/year audit of the books
- Treasurer: future candidate(s) for Board position
(Director, continued on page 2)

Simpson Observatory (609) 737-2575

(Director; continued from page 1)

- Observatory keyholder trainees: work toward becoming expert observers and participate in Public Observing Sessions at WC Park.

Please think about how you can “give back” to the AAAP, your peers, and to amateur astronomy, by contacting me, or other Board members or committee chairs, to help with these jobs.

Dark Skies! -- Rex

Astronomy in Colombia

When it comes to tourist capitol, Colombia admittedly is not a spot that comes immediately to mind. This beautiful but war torn South American nation has been embroiled in decades’ long struggles with government corruption, drug cartels, leftist guerrillas and right wing paramilitaries.

A recent visit to visit my wife’s family brought me to the country’s second largest city, Medellin. Formerly possessing an infamous reputation as the home of Colombian drug boss Pablo Escobar, I spent two enlightening weeks in the Antiochian capitol.

Since Medellin is 5,000 feet in the Andes and is famous for dark clear room temperature nights, I arrived with the greatest of expectations, not least of which to see the Magellanic Clouds that hovered at the horizon. I even had



use of my brother-in-law’s new LX125. However as luck would have it, my wife and I arrived in the middle of the rainy season which virtually guaranteed nighttime cloud cover. No Magellanic clouds, but I did get brief windows to observe the skies from the southern hemisphere. I introduced my brother-in-laws’ family to Saturn, the Orion Nebula and the Perseus Double Cluster.

To my surprise, Medellin is home to a just opened fully renovated planetarium. I was treated like a celebrity, being one of the few people from the U.S. to visit there, let alone an amateur astronomer. When we arrived, the planetarium was not yet open but they actually unlocked it for my wife and me for a personal tour! Later we attended a beautifully presented sky show about black holes.

There’s an active observing community in Medellin, meeting weekly at the planetarium. Field trips to the mountainous countryside were complicated by guerilla activity, which until recently posed difficulties for observing outside the city.. Current president Uribe has done much to change this by making the country far more secure during his administration.

I left my hosts with copies of the Sidereal Times for their library. They were gracious, very hospitable and anxious to communicate with fellow

astronomers from AAAP. Those members versed in Spanish wishing to dialogue with astronomers in Colombia can visit www.astrceta.tk or www.planetariomedellin.tk

Ken Levy

From the Program Chair

Join us on Tuesday, February 8, for a fascinating discussion with Michael Laine, President of the Liftport Group (LPG), on the technology, science, and development plans for the Space Elevator.

The Space Elevator, as an idea, originally appeared in a Russian newspaper in 1960. Now, forty-five years later, the same basic idea, matured through the scientific advances of the past four decades, is being considered the future in mass transportation. Most interestingly, according to the clock on Liftport’s website, the Space Elevator is due to liftoff 4826 Days, 2 hours, 22 minutes, and 40 seconds as of the date of this writing (April 12, 2018).

“The simplest explanation of the space elevator concept is that it is a ribbon with one end attached to the Earth’s surface and the other end in space substantially beyond geosynchronous orbit (62,000 miles-altitude). The competing forces of gravity at the lower end, and outward centripetal acceleration at the farther end, keep the ribbon under tension and stationary over a single position on Earth. This ribbon, once deployed, can be ascended by mechanical means to Earth orbit. By releasing at specific altitudes, low-, medium-, or high-Earth orbit can be achieved. If a climber proceeds to the far

end of the ribbon and releases, it would have sufficient energy to escape from Earth’s “gravity well” and travel to the Moon, Mars, Venus, and the Asteroids. ¹

Once built, the space elevator will be a great boon to virtually all space missions. In particular, the space elevator will be able to support missions to the Moon and to Mars by providing inexpensive, large-scale transport of supplies and infrastructure. In the future, it will also fill additional roles in the exploration and commercial development of a space-based economy.

Mr. Laine, in addition to his talk, will present a short animation video of the construction process, and will bring a sample of the carbon nanotubes (the building block of this project) as well as a technology test robotic lifter.

Members interested in attending the dinner, should email Michele Novatski, AAAP Program Chair at Michele@princetonastronomy.org by Monday, February 7. Dinner will begin promptly at 6:00pm at the Annex Restaurant in Princeton.

Note 1. Dr. Bradley C. Edwards, NIAC Phase 1 Report

Michele

Science Outreach and Exploration Update

"Science and Discovery Night" at Lawrence Elementary School (LES): Friday, Jan 28, 2005.

Well over 400 kids and adults attended this annual event with the motto "Science is Fun" and staffed by volunteer parent scientists from the community. There were 14 featured science activities. My program included "Mars in 3D" and "Titan Unveiled by the Huygens Probe" on behalf of The Planetary Society and the AAAP. Other featured activities included Birds of Prey, Chemistry, Microscopes, Scientific Drawings, Trees, Slime, Geodes and powerful Telescopes from the AAAP.

Many kids and adults were thrilled by "Mars in 3D". To make it especially memorable, the school PTO graciously bought 3D glasses for all the kids and gave them a take home 3D picture from Mars !!!

Kids enjoyed playing with the models of "Spirit" and the remote controlled "Sojourner" rovers. Lots of activity sheets were taken home to learn more about astronomy and space exploration.

At the end of the evening, I gave a special video and slide presentation which included "Birth of a Martian Robot, "Martian Robot Movies" and "Mars and Saturn in 3D" where everyone got to see 3D pictures on a large screen. So many enthusiastic kids reaching out to grab at the screen was truly heartening.

Many excellent questions from kids and adults included wondering about space aliens and life beyond earth, will the robot rovers return to Earth, will the rovers ever meet, how big is Spirit and how is she controlled, the origin of Saturn's rings and much more.

The sky was thankfully clear and the winds were calm after the deluge of snow and rain earlier in the week. And, it was nearly as cold as Titan. Primary targets for the streaming line of enthusiastic telescope viewers included Saturn, Comet Machholz and the Orion Nebula !!!

Many thanks to AAAP members Ron Mittelstaedt, John Miller, Brian Van Liew, Jane Lanahan and Ludy D'Angelo. Brian led the way to set up the scopes. Ron was virtually unrecognizable in his "Ultra Cold Weather" observing gear, especially next to Jane and Ludy. John was gushing at the incredible turnout.

Super Science Silver: NJ State Museum, Trenton, May 21/22, 2005

Everyone is welcome to attend or participate at the 25th anniversary of this event. My activities will feature astronomy/space exploration as well as a lecture presentation entitled "Exploring Mars and the Search for Life".

Starting this January, my volunteer public outreach activities are also on behalf of the Jet Propulsion Lab (JPL) as a local Solar System Ambassador.

Robotic Mission Exploration Update

Spirit and Opportunity on Mars: Both rovers celebrated their "One Year on Mars" Anniversary in January and continue their scientific exploration from opposite sides of the surface of Mars. Opportunity traveled southward to investigate its protective Heatshield, shed during descent. Then, just a few feet away, another scientific treasure. She discovers the first meteorite found on the surface of another planet: Composed of iron and nickel and as large as a basketball. Next target: South to Vostok

crater. Meanwhile, Spirit is nearing the summit of the Columbia Hills and finding more evidence for past water. Duststorms have lately raised the particulate level in the atmosphere, somewhat decreasing the available solar energy.

Cassini/Huygens: On January 14, the ESA built Huygens probe successfully descended for about 2.5 hours though the atmosphere of Titan, safely landed on a ground surface like wet clay and transmitted the first ever scientific investigations about the eerie and earthlike terrain. Islands, river channels, methane springs and water ice volcanoes all likely exist on Titan. Dark organic matter may have been washed from the brighter hilly terrain by periodic methane rains and become concentrated onto the low lying darker regions and channels. A methane cycle of evaporation and condensation probably exists on Titan, similar to the role of the water cycle on Earth. Next Titan flyby: Feb 15.

Deep Impact: Successfully launched on Jan 12 to Comet Temple 1. The mission is designed to smash a projectile into the comet on July 4 and create a large crater for the first-ever views deep beneath a comet's surface and then analyze the chemical composition. *Amateur astronomers can offer the public an earth based view of this event.*

Mars Reconnaissance Orbiter (MRO): Next orbital mission to Mars set for launch in August with the most capable suite of science instruments yet. MRO will look for signs of water activity to aid the quest for future rover landing sites.

Websites for daily updates/perspectives:

<http://marsrovers.jpl.nasa.gov/home/index.html>

<http://saturn.jpl.nasa.gov/home/index.cfm>

<http://www.esa.int/SPECIALS/Cassini-Huygens/>

<http://deepimpact.jpl.nasa.gov/index.html>

<http://www.planetary.org/>

Representing The Planetary Society and the AAAP

Ken Kremer

From the Treasurer:

The treasury balance is \$XXXX.

We are now insured by State Farm, thanks to the effort of John Church. We saved about \$200 from the previous years premium. The total with liability and property damage is \$1524.00.

Ron Mittelstaedt

Deadline for the
March Issue of the
Sidereal Times
February 25, 2005

NASA Swift Project

The Cassini/Huygens mission has overshadowed another, more recent launch, the NASA Swift Project. The Swift spacecraft lifted off aboard a Boeing Delta II rocket from pad 17-A at Cape Canaveral Air Force Station, Fla., at 12:16:00.611 p.m. EST on November 20, 2004. Swift has successfully begun its mission to study gamma-ray bursts and identify their origins. This is a spacecraft with a complement of three instruments for studying gamma-ray bursts and their afterglow. They are, the BAT, burst alert telescope; XRT, x-ray telescope and the UVOT, ultra violet/optical telescope.

The BAT keeps a constant eye on the sky for sudden bright bursts of gamma-rays. When a GRB is discovered the BAT calculates the location and the whole spacecraft is slewed to the new position for the other instruments to start collecting data.

The launch was on November 20, followed by several weeks of testing and setup. All systems have been tested and operate properly with one exception. On December 4th it was found that the TEC, thermo-electric cooler for the CCD X-ray detector could not be turned on due to low voltage from the power supply. As of this writing, that problem has not been resolved.

On December 13th the BAT team reviewed data and found that it had registered GRB 041211E, despite the fact that it was outside the field of view at the time. On December 16th the BAT successfully detected its first X-ray pulsar the transient V0332+53. Numerous GRBs have since been detected, the most recent as of this writing was on January 17th, following is an extract of the log.

“Swift conducted its first fully autonomous response to a burst. At 12:52:36 UT, the Swift Burst Alert Telescope (BAT) triggered and located on-board GRB050117a. The spacecraft autonomously slewed to the burst for the first time with a real GRB. XRT position was measured 192 seconds after the burst occurred. Because the burst was quite long, the first XRT data were collected before the burst ended, a first for a focused X-ray GRB/afterglow observation.”

The daily reports of the testing and setup can be followed on a daily basis at http://swift.gsfc.nasa.gov/docs/swift/operations/status_log.html.

The main site for the Swift Project is http://swift.gsfc.nasa.gov/docs/swift/about_swift/ which contains all the background mission information.

Bryan Hubbard

See us on the Web: www.princetonastronomy.org

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Amateur Astronomers'
Association of Princeton
PO Box 2017
Princeton, NJ 08543