

Catskills Astronomy Club News

5/1/04

Club News:

The scheduled observation session for April 10th was held on April 9th due to a poor weather forecast for the 10th. It was held at Jim McKeegan's home near Narrowsburg. A total of eleven people attended. The skies were very dark and gave us beautiful views of many deep sky objects. As the evening progressed we concentrated on viewing galaxies in Leo, Virgo, and Coma Berenices. Some of the highlights of the evening were the Leo Triplet of galaxies (M65, M66, and NGC 3628), the edge on galaxy NGC 4565 with its pronounced central bulge, and the pair of edge on galaxies NGC 4631 and NGC 4656.

The April 24th observation session was held at Walnut Mountain Park. Four people attended. The sky condition was very poor. The clearing that was predicted never occurred. Despite to poor conditions some observing was accomplished. We concentrated on what we could see. We started with the first crescent moon and Venus. Venus showed a crescent phase. We then viewed Jupiter and its four large moons. Saturn was next. The views of all the planets were fair since the seeing was not the best. We then observed some double stars including Mizar, Castor, Algeiba, and Cor Caroli. At around 9:30 the sky got progressively worse and the session ended.

The Northeast Astronomy Forum at Rockland County Community College in Suffern took place on April 17th and 18th. On that Saturday we setup a table on the balcony of the field house near the entrance. Information about our club as well as outreach material from NASA and Celestron was given out. We also setup a slide show on a laptop computer showing some images from our past observing sessions. Traffic by the table was brisk in as people came into the show. Several people showed interest in the club and in attending future observation sessions. Four members helped out at our table. One of the highlights of the show was the solar observing session sponsored by Coronado in the courtyard near the field house. Solar telescopes of various sizes were setup for the public to view the sun in hydrogen alpha. The views through the scopes were very pleasing and the sun showed some nice prominences. The image below shows a view of the field house floor from our balcony position.



The observation sessions for May are on the 15th and 22nd. Brian Deis of the Orange County Astronomy Club has suggested that we visit his observatory on May 15th and their club would come to Walnut Mountain Park to observe on May 22nd.

Anyone interested in submitting an astronomical observation or photograph for the newsletter, please contact John at kocis@verizon.net.

Each month the photo section of our newsletter will highlight the telescopes and equipment of club members. If you have a photo of your scope or equipment and a brief description of it that you would like to contribute please send it to John at kocis@verizon.net.

The club has selection of astronomy books, Stardate audio CDs, a Macintosh computer with astronomy software, and a Meade eight inch reflector for members to borrow. Please contact John at 791-5240 or kocis@verizon.net if you are interested in borrowing any of these.

Astronomy News:

Here are some articles from various NASA sources that might be of interest.

NEWS RELEASE: 2004-098 April 8, 2004

Two Storms Caught in the Act on Saturn

Three months before Saturn arrival, the Cassini spacecraft has observed two storms in the act of merging into one larger storm. This is only the second time this phenomenon has been observed on the ringed planet.

"Merging is one of the distinct features of storms in the giant planet atmospheres," said Dr. Andrew Ingersoll, member of the Cassini imaging team and professor of planetary science at the California Institute of Technology in Pasadena, Calif.

"On Earth, storms last for a week or so and usually fade away when they enter the mature phase and can no longer extract energy from their surroundings. On Saturn and the other giant planets, storms last for months, years, or even centuries, and instead of simply fading away, many storms on the giant planets end their lives by merging. How they form, however, is still uncertain," said Ingersoll.

With diameters close to 1,000 kilometers (621 miles), both storms were seen moving west, relative to the rotation of Saturn's interior, for about a month before they merged on March 19 through 20, 2004.

The northern storm moved about twice as fast as the southern storm, 11 meters per second versus 6 meters per second (25 miles per hour versus 13 miles per hour) respectively. They approached each other like two cars on a highway and spun around each other in a counterclockwise direction as they merged. This is the opposite of how hurricanes spin in the southern hemisphere on Earth.

Just after the merger, on March 20, the new storm was elongated in the north-south direction, with bright clouds on either end. Two days later the storm settled into a more circular shape and the bright clouds were spread around the circumference to form a halo. Whether the bright clouds are particles of a different composition or simply at a different altitude is uncertain.

Although these storms move slowly west, storms at Saturn's equator move east at speeds up to 450 meters per second (1,000 miles per hour), which is 10 times the speed of Earth's jet streams and three times greater than the equatorial winds on Jupiter.

"Saturn is the windiest planet in the solar system," said Ingersoll, "and that's a huge mystery. We'll be getting closer to the planet all the way through June, so maybe we'll find out."

Images from the Voyager spacecraft flybys of Saturn in August 1981 show storms partially merging, but to see them with Cassini this far out from Saturn is a mouthwatering surprise to scientists because they will get even closer during Cassini's four-year Saturn tour. "I'm optimistic because these images are already so good. The best is yet to come," said Ingersoll.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Office of Space Science, Washington, D.C. The Cassini orbiter and the two cameras were designed, developed and assembled at JPL. The imaging team is based at the Space Science Institute, Boulder, Colo.

A series of Cassini images documenting this event can be found at the Cassini-Huygens mission home page:

<http://saturn.jpl.nasa.gov>

and

<http://ciclops.org>

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IMAGE ADVISORY: 2004-100

April 13, 2004

Invisible Giants Exposed in New Spitzer Image

Hidden behind a curtain of dusty darkness lurks one of the most violent pockets of star birth in our galaxy. Called DR21, this stellar nursery is so draped in cosmic dust that it appears invisible to the human eye.

By seeing in the infrared, NASA's Spitzer Space Telescope has pulled this veil aside, revealing a fireworks-like display of massive stars. The biggest of these stars is estimated to be 100,000 times as bright as our own Sun.

The new image is available online at <http://www.spitzer.caltech.edu> and <http://photojournal.jpl.nasa.gov> .

"We've never seen anything like this before," said Dr. William Reach, an investigator for the latest observations and an astronomer at the Spitzer Science Center, located at the California Institute of Technology, Pasadena, Calif. "The massive stars are ripping the cloud of gas and dust around them to shreds." The principal investigator is Dr. Anthony

Marston, a former Spitzer astronomer now at the European Space Research and Technology Centre, the Netherlands.

Located about 10,000 light-years away in the Cygnus constellation of our Milky Way galaxy, DR21 is a turbulent nest of giant newborn stars. The region is buried in so much space dust that no visible light escapes it. Previous images taken with radio and near-infrared bands of light reveal a powerful jet emanating from a huge, nebulous cloud. But these views are just the tip of the iceberg.

Spitzer's highly sensitive infrared detectors were able to see past the obscuring dust to the stars behind. The new false-color image spans a vast expanse of space, with DR21 at the top center. Within DR21, a dense knot of massive stars can be seen surrounded by a wispy cloud of gas and dust. Red filaments containing organic compounds called polycyclic aromatic hydrocarbons stretch horizontally and vertically across this cloud. A green jet of gas shoots downward past the bulge of stars and represents fast-moving, hot gas being ejected from the region's biggest star.

Below DR21 are distinct pockets of star formation, never captured in full detail before. The large swirling cloud to the lower left is thought to be a stellar nursery like DR21's, but with smaller stars. A bubble possibly formed by a past generation of stars is visible within the lower rim of this cloud.

The new view testifies to the ability of massive newborn stars to destroy the cloud that blankets them. Astronomers plan to use these observations to determine precisely how such an energetic event occurs.

Launched on August 25, 2003, from Cape Canaveral, Florida, the Spitzer Space Telescope is the fourth of NASA's Great Observatories, a program that also includes the Hubble Space Telescope, Compton Gamma Ray Observatory and Chandra X-ray Observatory.

JPL manages the Spitzer Space Telescope mission for NASA's Office of Space Science, Washington. Science operations are conducted at the Spitzer Science Center. JPL is a division of Caltech. Spitzer's infrared array camera, used to capture the new image of DR21, was built by NASA Goddard Space Flight Center, Greenbelt, Md. The development of the camera was led by Dr. Giovanni Fazio of Smithsonian Astrophysical Observatory, Cambridge, Mass.

Additional information about the Spitzer Space Telescope is available at <http://www.spitzer.caltech.edu>.

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Cosmic Magnifying Glass: Distant Star Reveals Planet

Like Sherlock Holmes holding a magnifying glass to unveil hidden clues, modern day astronomers used cosmic magnifying effects to reveal a planet orbiting a distant star.

This marks the first discovery of a planet around a star beyond Earth's solar system using gravitational microlensing. A star or planet can act as a cosmic lens to magnify and brighten a more distant star lined up behind it. The gravitational field of the foreground star bends and focuses light, like a glass lens bending and focusing starlight in a telescope. Albert Einstein predicted this effect in his theory of general relativity and confirmed it with our Sun.

"The real strength of microlensing is its ability to detect low-mass planets," said Dr. Ian Bond of the Institute for Astronomy in Edinburgh, Scotland, lead author of a paper appearing in the May 10 *Astrophysical Journal Letters*. The discovery was made possible through cooperation between two international research teams: Microlensing Observations in Astrophysics (Moa) and Optical Gravitational Lensing Experiment (Ogle). Well-equipped amateur astronomers might use this technique to follow up future discoveries and help confirm planets around other stars.

The newly discovered star-planet system is 17,000 light years away, in the constellation Sagittarius. The planet, orbiting a red dwarf parent star, is most likely one-and-a-half times bigger than Jupiter. The planet and star are three times farther apart than Earth and the Sun. Together, they magnify a farther, background star some 24,000 light years away, near the Milky Way center.

In most prior microlensing observations, scientists saw a typical brightening pattern, or light curve, indicating a star's gravitational pull was affecting light from an object behind it. The latest observations revealed extra spikes of brightness, indicating the existence of two massive objects. By analyzing the precise shape of the light curve, Bond and his team determined one smaller object is only 0.4 percent the mass of a second, larger object. They concluded the smaller object must be a planet orbiting its parent star.

Dr. Bohdan Paczynski of Princeton University, Princeton, N.J., an OGLE team member, first proposed using gravitational microlensing to detect dark matter in 1986. In 1991, Paczynski and his student, Shude Mao, proposed using microlensing to detect extrasolar planets. Two years later, three groups reported the first detection of gravitational microlensing by stars. Earlier claims of planet discoveries with microlensing are not regarded as definitive, since they had too few observations of the apparent planetary brightness variations.

"I'm thrilled to see the prediction come true with this first definite planet detection through gravitational microlensing," Paczynski said. He and his colleagues believe observations over the next few years may lead to the discovery of Neptune-sized, and even Earth-sized planets around distant stars.

Microlensing can easily detect extrasolar planets, because a planet dramatically affects the brightness of a background star. Because the effect works only in rare instances, when two stars are perfectly aligned, millions of stars must be monitored. Recent advances in cameras and image analysis have made this task manageable. Such developments include the new large field-of-view Ogle-III camera, the Moa-II 1.8 meter (70.8 inch) telescope, being built, and cooperation between microlensing teams.

"It's time-critical to catch stars while they are aligned, so we must share our data as quickly as possible," said Ogle team-leader Dr. Andrzej Udalski of Poland's Warsaw University Observatory. Udalski in Poland and Paczynski in the U.S lead the Polish/American project. It operates at Las Campanas Observatory in Chile, run by the Carnegie Institution of Washington, and includes the world's largest microlensing survey on the 1.3 meter (51-inch) Warsaw Telescope.

NASA and the National Science Foundation fund the Optical Gravitational Lensing Experiment in the U.S. The Polish State Committee for Scientific Research and Foundation for Polish Science funds it in Poland. Microlensing Observations in Astrophysics is primarily a New Zealand/Japanese group, with collaborators in the United Kingdom and U.S. New Zealand's Marsden Fund, NASA and National Science Foundation, Japan's Ministry of Education, Culture, Sports, Science, and Technology, and the Japan Society support it for the Promotion of Science.

Images and information about the latest research are available on the Internet at <http://www.jpl.nasa.gov/releases/2004/103a.cfm>

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News Release: 2004-104

April 15, 2004

Mars Rover Finds Rock Resembling Meteorites That Fell to Earth

NASA's Opportunity rover has examined an odd volcanic rock on the plains of Mars' Meridiani Planum region with a composition unlike anything seen on Mars before, but scientists have found similarities to meteorites that fell to Earth.

"We think we have a rock similar to something found on Earth," said Dr. Benton Clark of Lockheed Martin Space Systems, Denver, science-team member for the Opportunity and Spirit rovers on Mars. The similarity seen in data from Opportunity's alpha particle X-ray spectrometer "gives us a way of understanding 'Bounce Rock' better," he said. Bounce Rock is the name given to the odd, football-sized rock because Opportunity struck it while bouncing to a stop inside protective airbags on landing day.

The resemblance helps resolve a paradox about the meteorites, too. Bubbles of gas trapped in them match the recipe of martian atmosphere so closely that scientists have been confident for years that these rocks originated from Mars. But examination of rocks on Mars with orbiters and surface missions had never found anything like them, until now.

"There is a striking similarity in spectra," said Christian Schroeder, a rover science-team collaborator from the University of Mainz, Germany, which supplied both Mars rovers' Moessbauer spectrometer instruments for identifying iron-bearing minerals.

Mars Exploration Rover scientists described two such meteorites in particular during a Mars Exploration Rover news conference at NASA's Jet Propulsion Laboratory, Pasadena, Calif. One rock, named Shergotty, was found in India in 1865 and it gave its name to a class of meteorites called shergottites. A shergottite named EETA79001 was found in Antarctica in 1979 and has an elemental composition even closer to Bounce Rock's. Those two and about 18 other meteorites found on Earth are believed to have been ejected from Mars by the impacts of large asteroids or comets hitting Mars.

Opportunity's miniature thermal emission spectrometer indicates that the main ingredient in Bounce Rock is a volcanic mineral called pyroxene, said science-team collaborator Deanne Rogers of Arizona State University, Tempe. The Moessbauer spectrometer also identified pyroxene in the rock. The high proportion of pyroxene makes it unlike not only any other rock studied by Opportunity or Spirit, but also unlike the volcanic deposits mapped extensively around Mars by a similar spectrometer on NASA's Mars Global Surveyor orbiter, Rogers said.

Thermal infrared imaging by another orbiter, Mars Odyssey, suggests a possible origin for Bounce Rock. An impact crater about 25 kilometers wide (16 miles wide) lies about 50 kilometers (31 miles) southwest of Opportunity. The images show that some rocks thrown outward by the impact that formed that crater flew as far as the distance to the rover. "Some of us think Bounce Rock could have been ejected from this crater," Rogers said.

Opportunity is driving eastward, toward a crater dubbed "Endurance" that might offer access to thicker exposures of bedrock than the rover has been able to examine so far. With new software to improve mobility performance, the rover may reach Endurance within two weeks, said JPL's Jan Chodas, flight software manager for both Mars Exploration Rovers.

Mission controllers at JPL successfully sent new versions of flight software to both rovers. Spirit switched to the new version successfully on Monday, and Opportunity did late Tuesday.

A parting look at the small crater in which Opportunity landed is part of a full 360-degree color panorama released at the news conference. The view combines about 600

individual frames from the rover's panoramic camera, said science-team collaborator Jason Soderblom of Cornell University, Ithaca, N.Y. It is called the Lion King panorama because it was taken from a high-ground viewpoint at the edge of the crater, like the high-ground viewpoint used by animal characters in the Lion King story.

The panorama gives a good sense of how wind has uncovered the outcrop at the upwind side of the crater and deposited sand in the downwind side of the crater and bright martian dust in the wind shadow of the crater, Soderblom commented. On the wide plain outside the crater lies Bounce Rock.

JPL, a division of the California Institute of Technology in Pasadena, manages the Mars Exploration Rover project for NASA's Office of Space Science, Washington, D.C. Images and additional information about the project are available from JPL at <http://marsrovers.jpl.nasa.gov> and from Cornell University, Ithaca, N.Y., at <http://athena.cornell.edu> .

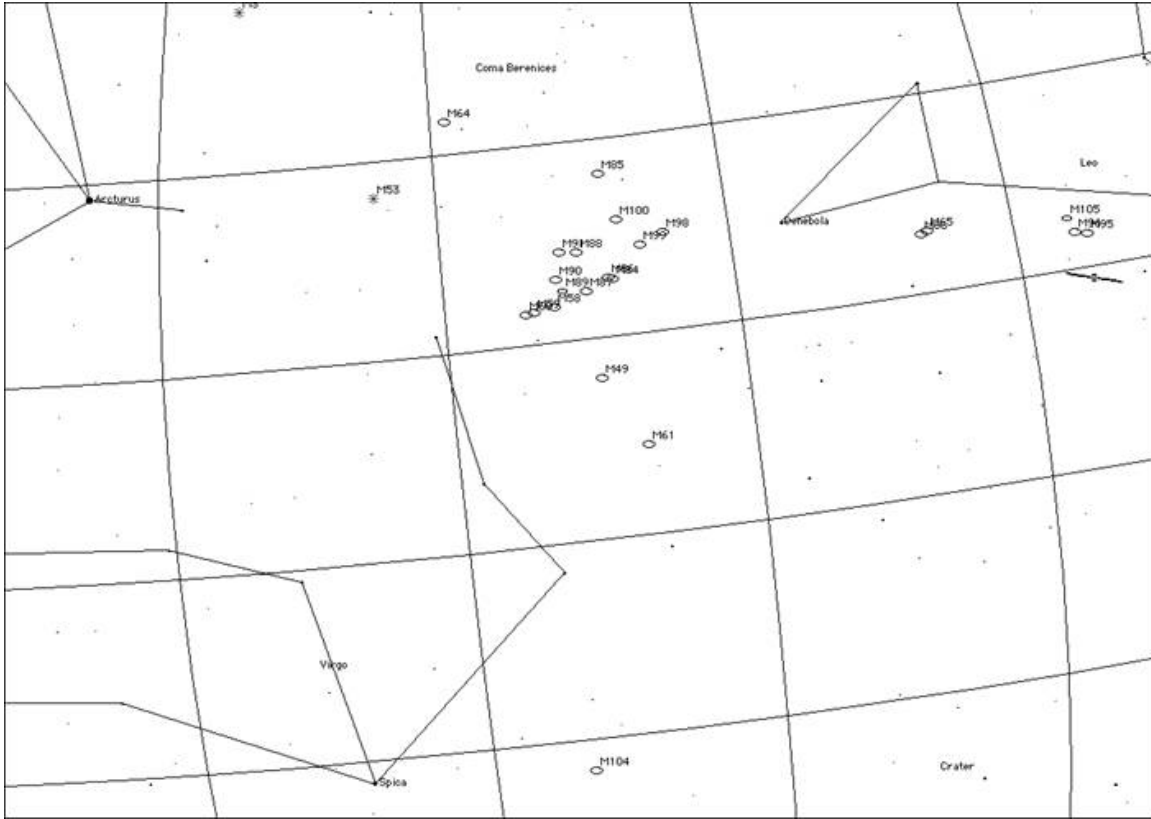
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Mid Evening Observing Highlights for April

May is also good month to observe galaxies. Leo, Virgo and Coma Berenices have many galaxies within them to observe. All three constellations are almost directly overhead. The Sombrero Galaxy (M104) in Virgo can be found almost due south in the sky. The Ursa Major is high in the northern sky. The bright star Arcturus is high in the eastern sky. The keystone of Hercules is rising in the east. It contains the globular cluster M13. Gemini is setting in the west. The image below shows the locations of some of the galaxies in Leo, Coma Berenices, and VNew moon occurs on May 19th and full moon occurs on May 4th. Saturn is in the western sky in Gemini and Jupiter is high in the sky in Leo.

Comet C/2001 Q4 (NEAT) can be seen in the western sky all month long. It will be near the open cluster M44 in Cancer on May 15th. Comet C/2002 T7 (LINEAR) can be seen low in the western sky at the end of the month. Check out the following link to find out more.

http://skyandtelescope.com/observing/objects/comets/article_1229_1.asp



BARLOW BOB'S CORNER

Barlow Bob is a member of the Rockland Astronomy Club.

THE AMATEUR ASTRONOMERS ASSOCIATION OF PRINCETON

**PRESENTS THE 15TH ANNUAL
JERSEY STARQUEST**

Held at the Hope Conference and Renewal Center, Hope, NJ (908) 459-4435
Beginning at 5 PM Friday, June 18th, 2004 and running through 12 PM Sunday, June 20th
(Friday dinner, 6:30-7:30, food will be available for late arrivals)

Please note: This event will take place regardless of the weather conditions!

Featuring

Stargazing at an amazing, dark sky location
AAAP sponsored "Deep Sky Observing" contest
Free space available for astronomical swap meet
Indoor cabin accommodations (First come, first served)
Ample space for camping & RV's
Hot showers for all
Five catered meals
Raffle & Door prizes

Scheduled Lecture Program

Prominent Experts will conduct Saturday afternoon seminars.
A keynote speaker will address the group after Saturday night dinner.

Other Planned Activities Include

Solar Observing
Demonstration of Laser Collimating
Field Trip to AAAP Observatory at Jenny Jump
CCD Demonstration
Workshop on learning to use your new telescope

Plus

Swimming (life guards provided), Fishing, Volleyball, Basketball, Hiking, Game room
Boating on two lakes adjacent to property, and on the nearby
Pequest, and Paulins Kill rivers– bring your own kayak or canoe.

Registration Fees

Camping and RV -- \$35.00 per person (\$45 after June 4th)
Bunkhouse -- \$45.00 per person (\$55 after June 4th)
Family Registration Discount – After 2nd paying family member, subtract \$5.00 per child,
6-12
Children under 6 years of age – Free

Meals

(Friday dinner, Saturday breakfast, lunch, and dinner, Sunday breakfast)
(Friday dinner, 6:30-7:30, food will be available for late arrivals)
Adult -- \$35.00 per person
Child (ages 6 – 12) -- \$20.00 per person
Children under 6 years of age – Free

Please send the registration form and your check or money order (payable to AAAP) to:

Jersey Starquest Registration
c/o Anthony Monticello
270 Fieldboro Drive
Lawrenceville, NJ 08648

Need more information? Send email to Anthony Monticello at
anthony_monticello@hotmail.com

JERSEY STARQUEST REGISTRATION FORM

NAME _____

ADDRESS _____

EMAIL (for information about future events) _____

TELEPHONE _____

CLUB _____

TOTAL NUMBER OF ADULTS IN YOUR PARTY? _____

TOTAL NUMBER OF CHILDREN (Ages 6 – 12)? _____

TOTAL NUMBER OF CHILDREN UNDER 6 YEARS OLD? _____

ACCOMMODATION PREFERENCE(S):

INDOOR _____ TENT _____ RV _____

Would you like to enter into a “Deep Sky Observing” contest? _____

Will you need space to set up an astronomical swap table? _____

FEES:

(No charge for children under 6 years of age)

Registration (per person)	\$35.00 _____	(camping or RV)
	\$45.00 _____	(bunkhouse)
	\$10.00 _____	(late fee after June 4)

Meals (Adult) \$35.00 _____

Meals (Child, ages 6 – 12) \$20.00 _____

FAMILY DISCOUNT - \$5.00 _____

(after 2nd paying family member, per child 6-12)

TOTAL ENCLOSED _____

Please send completed registration form and your check or money order (payable to AAAP) to:

Jersey Starquest Registration
c/o Anthony Monticello
270 Fieldboro Drive
Lawrenceville, NJ 08648

Need more information? Send email to Anthony Monticello
anthony_monticello@hotmail.com

IMPORTANT – We may not be able to accommodate requests for meals for registrations received after June 4.

Please Note – Pets are not permitted at the site.

This event will be held regardless of the weather conditions.

Sorry -- No Refund for Cancellations received after June 4.

NASA Space Place

The column was not submitted.