

OBSERVER

Newsletter of the Denver Astronomical Society
One Mile Nearer the Stars

Image copyright 2007 Steve Solon

Sittin' Pretty

M81 (above right) and M82 are two of the most easily observed galaxies in the sky. Members of the Ursa Major cluster of galaxies, they can be seen with a small telescope or good pair of binoculars. Steve used an 80mm StellarVue refractor on a Paramount ME mount.

FINALLY SPRINGTIME!

A P R I L S K I E S

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This month find Venus climbing to its highest altitude in the western sky, eventually setting 3 1/2 hours after sunset. At an apparent magnitude $M_v -4.1$, the second terrestrial planet from the sun is easy to locate. Of particular

interest on April 11, Venus will be 2.6° south of The Pleiades and this is a good binocular grouping. On the 19th look for the Moon less than a degree from the center of M45.

Saturn shines at $M_v 0.4$ high in the south-

APRIL PREDOMINANT CELESTIAL OBJECTS

Description	RA	DEC	Description	RA	DEC
Perseus double cluster	02h 21.5m	$57^\circ 08'$	M35 cluster	06h 08.9m	$24^\circ 21'$
ι (iota) Cassiopeiae, triple star	02h 29.0m	$67^\circ 24'$	M81 galaxy	09h 55.6m	$69^\circ 04'$
M42, Orion nebula	05h 35.4m	$-5^\circ 22'$	Coma Berenices cluster	12h 24.5m	$25^\circ 43'$
σ (sigma) Orionis, multiple star	05h 38.7m	$-2^\circ 35'$	M87 galaxy	12h 30.8m	$12^\circ 23'$

2 Full moon
10 Last quarter moon
17 New moon
21 National Astronomy Day
24 First quarter moon

southeast after sunset. Its retrograde motion, that is, its westward motion against the starry background, stops on April 19. Even at its current magnitude, small telescopes will bring out the rings of this Jovian giant. However,

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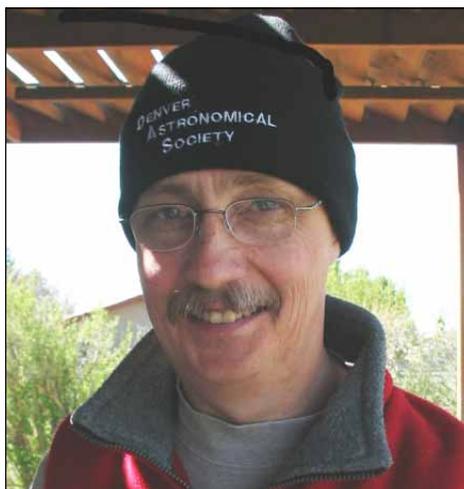
President's Corner

Another election and banquet cycle has completed. This year's banquet was well attended, and Dr. John Steven's talk about the expectations of the Orion Mission (CEV), the emerging ARES launch platform, and science experiments on the Moon was most enlightening. We had a special guest from the Atlanta Astronomy Club, checking out the way we do things out west.

The Open House in April is scheduled to coincide with the first National Astronomy Day for 2007. DAS has made no special plans for the day, aside from our usual Open House activities. The second Astronomy Day is planned for September 15, 2007. The Astronomical League voted to move Astronomy Day to the start of the traditional school year and to avoid the bad weather we find in most parts of the country in the April time-frame. The second event will be structured like our normal Colorado Astronomy day activities.

We added a committee to develop a student astronomy program for DAS and elected Naomi Pequette as its chairperson. The committee is looking for you experienced DAS members to join in and share thoughts about creating the program.

Bryan Wilburn has stepped up to handle all of our outside star parties. This does not mean that he will attend every one of them! We're looking to de-



Wayne Green, President of the Denver Astronomical Society.

velop a list of people interested in these activities. We will have a list on the website and announce them on the DAS list server. His name, phone number and email address are on the "Society Directory" here in the newsletter.

I want to hold a "members and guests only" star party or two around town this summer. Email me with locations you would like to see us get together.

Dust off those scopes, and get ready for a great spring of observing!—Wayne Green



DAS Schedule

APRIL

- 6 General Membership Meeting at D.U.'s Olin Hall (*Begins at 7:30 P.M.*)
- 14-15 EGK Dark Site Weekend
- 21 National Astronomy Day #1 Open House at Chamberlin Observatory (*Begins at 7:30 P.M.*)
- 27 E-Board meeting at Chamberlin Observatory (*Begins at 7:30 P.M.*)

MAY

- 4 General Membership Meeting at D.U.'s Olin Hall (*Begins at 7:30 P.M.*)
- 11 E-Board meeting at Chamberlin Observatory (*Begins at 7:30 P.M.*)
- 18-20 Texas Star Party
- 19-20 EGK Dark Site Weekend
- 25-27 RTMC
- 26 Open House at Chamberlin Observatory (*Begins at 7:30 P.M.*)

*Public nights are held every Tuesday and Thursday evenings beginning at the following times: October 1 - March 31 at 7:00 P.M.
April 1 - September 30 at 8:30 P.M. at Chamberlin Observatory
Costs to non-members are: \$3.00 adults, \$2.00 children.
Please call (303) 871-5172 for reservations.*

Society Directory

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The Executive Board conducts the business of the DAS at 8 P.M. at Chamberlin Observatory. Please see the Schedule of Events for meeting dates. All members are welcome.

the das . org

Bally to Focus on Significance of Star and Planet Birth at April Meeting

by Darrell Dodge

John Bally will present on star and planet formation and their role in evolution of galaxies, the universe, and life at the April 6th general meeting. Based on material in Dr. Bally's new book, *The Birth of Stars and Planets* (published by Cambridge University Press), the presentation will review what scientists know about isolated star birth in dark clouds, the formation of star clusters and nebulae, the "ecology" of interstellar gas and dust, the use of jets to detect starbirth, and the violent starbursts that may produce black holes. Dr. Bally will use Hubble Space Tele-

scope images and recent data from a variety of sources to illustrate his descriptions of the star-forming cores and accretion disks in giant molecular clouds. He will also discuss the sub-condensation and tenuous development of planets in the stellar accretion disks and explore the requirements for, and possibility of life on extra-solar planets. Dr. Bally will explain why he concludes that the 3 to 10 new stars that form in the Milky Way Galaxy each year are key to its evolution.

A frequent visitor to DAS, John Bally is a Professor in the Department of Astro-

physical and Planetary Sciences at the University of Colorado, Boulder and an enthusiastic free-style skier. His presentations are always exciting, accessible, thought-provoking and memorable. This will be an evening you shouldn't miss.

General meetings are held in the Room 105 lecture hall at Olin Hall on the University of Denver campus, starting at 7:30 P.M. They are open to the public and particularly those who are interested in learning about the DAS. DU charges a fee for lot parking, which can be paid inside Olin Hall. There is also some street parking available. As usual, attendees are invited to a reception at Chamberlin Observatory following the meeting, where there will be refreshments, conversation, and this month—given clear skies—a chance for a look at Saturn.

Banquet Attendees Captivated by Lockheed-Martin's Dr. John Stevens

Dr. John Stevens, the leader of the Lockheed Martin team that won NASA's competition to develop the Orion Crew Exploration Vehicle, led the 75 attendees at the March 3rd Spring Banquet through the creative planning process that led to the team's success and provided a convincing explanation of the rationale for resuming human exploration of the moon. Dr. Stevens, now the Director of Development for Lockheed Martin Space Systems, stressed that the combination of direct human exploration and robot technology is (where possible) the best way to conduct scientific exploration of the geology of moons and planetisms. He also argued that returning to the moon is a vital first step in developing the capability to extend our manned exploration to Mars. He expertly fielded many questions from DAS members that encouraged him to expand on many of the points in his excellent presentation.

Other notable events at the banquet were the introduction of the new 2007 officers and E-board, an AL observing award presentation, and the drawing of

the quarterly participation prize (A Rukl Moon Atlas from S&S Optika, won by Hugh Davidson.) University of Denver

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Chuck Carlson is presented a plaque for his many contributions to the DAS. Flanking Wayne Green and Chuck are; David Shouldice, left; Darrell Dodge, right. Chuck is also known for his invention called the "Denver Chair," an adjustable observer's chair that has been made in many versions since.

Credit & Copyright: Joe Gafford

updates

Event Report: Conditions Nearly Perfect for 2007 DAS Messier Marathon

by Darrell Dodge

Except for several hours of pesky south winds, observing conditions at the Edmund G. Kline Dark Site near Deer Trail were just about perfect for the 2007 DAS Messier Marathon held on Saturday and Sunday, March 17-18, 2007.

About 20 people ventured out to the site and 11 of them participated in the yearly attempt to observe as many of the 110 objects in the Messier Catalog as possible in one night. There were four guests and visitors, including several people experiencing observing at truly dark skies for the first time. Scope apertures ranged from 90mm to 25 inches.

Five observers viewed over 50 Messier objects, including three over 70. Jim Holder topped the list with 109 objects that he acquired starhopping with his 12.5-inch Dobsonian and Stellarvue finder/refractor. As many have found in the past, the final Messier object, M30—a globular cluster in Capricorn—

was impossible to see in March-April twilight at the dark site. David Shouldice logged 79 objects with his 15-inch Dob. Jim Carpenter and his wife Jeanette bagged 77 and 64 objects respectively with their refractors. Alan Erickson saw 59 starhopping with his CGE 1100. Others who

participated included David Blaylock, Joamar Marrachine, Mike Moya, Dan Wray, Tim Winkelman and Neil Pearson (who was working on detailed observing notes and drawings for the Messier observing program). Some people spent the night imaging.

This was the first major Dark Sky Weekend that the eight new pads at the dark site were fully occupied. Everyone seemed happy with the new “digs” and one participant even used his electric outlet to power an on-pad coffee pot.



By nightfall, all 14 of the north observing pads at the Edmund G. Kline Dark Site were in use during the 2007 Messier Marathon.

Photo courtesy Joe Gafford

Celebrate National Astronomy Day and Earth Day at the April Open House

By Darrell Dodge

The Open House starting at 7:30 P.M. on Saturday April 21st will combine national and local celebrations of Astronomy Day and Earth Day.

April 21st is the first celebration of National Astronomy Day in this transition year. The Astronomical League has responded to the requests of DAS and many other as-

tronomical societies by moving the official observance of NAD from April to September during 2007 to take advantage of superior fall weather in most of the U.S. This September 22nd, we will be coordinating Colorado Astronomy Day with the new National day. Plans will be posted on the Colorado Astronomy Day Web site at

www.coloradoastronomyday.org as they are developed.

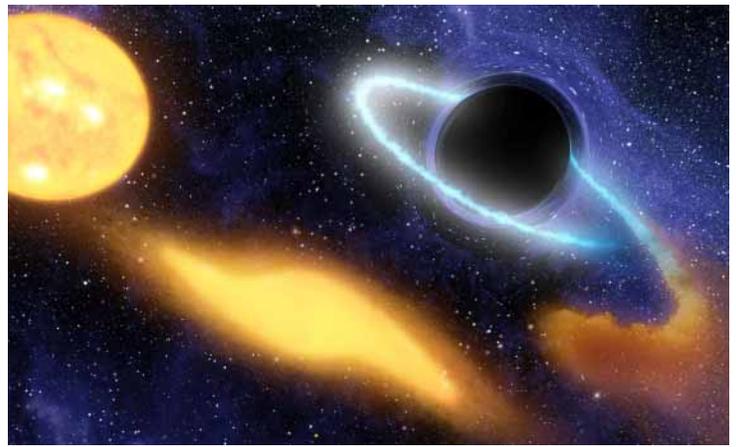
April 22nd is the traditional observance of Earth Day, which provides us with a great opportunity to highlight the importance of preserving dark skies and saving the energy lost to humanity's futile attempt to illuminate the universe.

Therefore, April's Open House at Chamberlin Observatory will combine elements of the monthly public star party with education about ways to prevent light pollution, help reduce global warming, and promote the importance of maintaining the view of our night skies for all.



Black Hole Breakfast

by Dr. Tony Phillips



In this artist's concept, a giant black hole is caught devouring a star that ventured too close.

Courtesy NASA

We all know that birds eat worms. Every day, millions of birds eat millions of worms. It's going on all around you! But how often have you awakened in the morning, stalked out in the dewy grass, and actually seen a bird having breakfast? Even though we know it happens all the time, a bird gulping a worm is a rare sight.

Just like a black hole gulping a star...

Every day in the Universe, millions of stars fall into millions of black holes. And that's bad news for the stars. Black holes exert terrible tides, and stars that come too close are literally ripped apart as they fall into the gullet of the monster. A long burp of X-rays and ultraviolet radiation signals the meal for all to see.

Yet astronomers rarely catch a black hole in the act. "It's like the problem of the bird and the worm," says astronomer Christopher Martin of Caltech. "You have to be in the right place at the right time, looking in the right direction and paying attention."

A great place to look is deep in the cores of galaxies. Most galaxies have massive black holes sitting in their pinwheel centers, with dense swarms of stars all around. An occasional meal is inevitable.

A group of astronomers led by Suvi Gezari of Caltech recently sur-

veyed more than 10,000 galactic cores—and they caught one! In a distant, unnamed elliptical galaxy, a star fell into a central black hole and "burped" a blast of ultraviolet radiation.

"We detected the blast using the Galaxy Evolution Explorer (GALEX), an ultraviolet space telescope," explains Gezari. Her team reported the observation in the December 2006 issue of *The Astrophysical Journal Letters*. "Other telescopes have seen black holes devouring stars before," she adds, "but this is the first time we have been able to watch the process from beginning to end."

The meal began about two years ago. After the initial blast, radiation diminished as the black hole slowly consumed the star. GALEX has monitored the process throughout. Additional data from the Chandra X-ray Observatory, the Canada-France-Hawaii Telescope and the Keck Telescope in Hawaii helped Gezari's team chronicle the event in multiple wavelengths

Studying the process in its entirety "helps us understand how black holes feed and grow in their host galaxies," notes Martin.

One down, millions to go.

"Now that we know we can observe these events with ultraviolet

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April Skies

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this is the last month for the next seven years we'll be able to view the rings at their 15° tilt from edge-wise. While Saturn's rings will decrease in tilt as viewed from the Earth, they are still very much visible.

Toward the last of April, Jupiter will start rising at the end of evening. Whereas Saturn's retrograde motion stops on the 19th, Jupiter starts retrograde on the 6th, and will continue for about four months. The best telescopic viewing is just before dawn. Its apparent diameter is over 40 arcsec.

Over the past several months, Mars has not been given a lot of attention, primarily due to the small angle it subtends. April is no exception, except that the Red planet grows in magnitude to 1.0 and around 5" diameter. If you are one of those who has not located the blue gas giant Uranus, on April 28-29 it will pass to within a degree of Mars.

The week of April 17-24, we celebrate National Dark-Sky Week. According to the NDSW website <http://www.ndsw.org>—people in the United States are encouraged to turn out their unnecessary outdoor lights in order to temporarily reduce light pollution. This light pollution not only creates prob-

lems for astronomers, but threatens to eliminate our view of the cosmos, and the view of generations to come. The NDSW works to raise the awareness of the harmful effects of light pollution and promote better, more efficient lighting systems. Visit the International Dark-Sky Association (IDA)—<http://www.darksky.org/> for information on what each of us can do to become ambassadors in preserving the gifts of the night sky. If you have specific questions regarding the IDA or what you can do personally to help, visit with our IDA Representative Dr. Robert "Bob" Stencel during Open House at Chamberlin Observatory.

To get a great view of the planets, stars, and other celestial objects, visit the Denver Astronomical Society's next Open House at 5 p.m. on Saturday, April 21 at the University of Denver's Historic Chamberlin Observatory. For the public, there is a \$1 upkeep fee to look through the Clark 20-inch telescope. Members of the Denver Astronomical Society have free access to the Clark 20-inch at Chamberlin Observatory during Open House.—Ron Mickle

Astronomical Calendar 2007, Starry Night Pro, Sky & Telescope and Astronomy magazines and US Naval Observatory.

Banquet Speaker

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astronomy professor Dr. Robert Stencel offered some encouraging words about the increase in public response to DAS and DU outreach activities at DU's Chamberlin Observatory in 2006.

The DAS thanks the employees at the White Fence Farm for waiting while we concluded what turned out to be a wonderful — and very long — annual banquet.—Darrell Dodge



Messier



At left is a composite of the “Leo Trio” of galaxies. It contains three CCD images overlaying a film image taken at the 1998 Texas Star Party. The 3 ccd images were taken on 3/21/2004 at the Messier marathon at the EGK site. All four images were taken with the 18-inch f/4.5 JMI telescope. The background image was taken with Kodak Royal Gold 400-2 film, and the ccd images were taken with an SBIG ST-2000XM CCD camera. M65 is at upper right, M66 is at lower right and NGC3628 is on the left.

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Below right, The Triangulum Galaxy, M33 (NGC 598) is a spiral galaxy about 2.6 million light-years away in the constellation Triangulum. It’s small relative to its larger neighbors, the Milky Way and Andromeda Galaxies, but is about average compared to most spiral galaxies in the universe.



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Above, the Swan (or Omega) Nebula, M17 (NGC 6618) is a fine emission nebula visible to the naked eye under dark skies as a faint fuzzy patch in the dense star clouds of Sagittarius. This cloud of gas and dust in the Milky Way is located about 4,890 light-years from Earth and contains an open star cluster in addition to the nebula. Craig used his SBIG ST2000XM camera on an AP155 f/7 with a AP900 mount.



Copyright 2007 Phillip Good



Hot Shots



Copyright 2007 Steve Solon

Above, the beautiful Pinwheel Galaxy, M33 (NGC 598) in Triangulum, shines at magnitude 5.7 and performs its spiral whirls not far from the Milky Way's serene sister galaxy, M31. Also The Pinwheel contains untold numbers of star-forming regions and sends us its glow from 2.3 million light-years away. The image was made with an SBIG ST-8e CCD camera on a StellarVue 80mm refractor.



Copyright 2007 Philip Good

Above, the Lagoon Nebula, M8 (NGC 6523) is a giant interstellar cloud and H II region in the constellation Sagittarius. Philip Good captured this image on July 13, 2006 at Thunderidge in South Park, CO using a Stellarvue SV80S 80mm APO refractor at f/4.8 on a Takahashi EM200 mount with an SBIG ST-2000XM CCD.

Below, a member of our galaxy, the globular cluster M3 (NGC 5272) contains approximately 500,000 stars and is at a distance of about 32,000 light-years from Earth. Craig used an SBIG ST2000XM on an AP155 f/7 telescope with a G11/Gemini mount.



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NASA's Space Place

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light," says Gezari, "we've got a new tool for finding more."

For more on this and other findings of GALEX, see www.galex.caltech.edu. For help explaining black holes to kids, visit The Space Place at spaceplace.nasa.gov.

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



About the Denver Astronomical Society

Membership in The Denver Astronomical Society is open to anyone wishing to join. The DAS provides trained volunteers who host educational and public outreach events at the **University of Denver's Historic Chamberlin Observatory**, which the DAS helped place on the National Register of Historic Places. First light at Chamberlin in 1894 was a public night of viewing, a tradition the DAS has helped maintain since its founding in 1952.

The DAS is a long-time member in good standing of the **Astronomical League** and participates in **NASA's Project Astro** program.

The DAS' credo is to provide its members a forum for increasing and sharing their knowledge of astronomy, to promote astronomical education to the public, and to preserve **Historic Chamberlin Observatory** and its telescope in cooperation with the University of Denver.

The DAS is a 501(c)(3) tax-exempt corporation and has established three tax-deductible funds: the Van Nattan-Hansen Scholarship Fund, the Public Outreach Fund, and the Edmund G. Kline Dark Site Fund. To contribute, please see the bottom of the membership form for details.

More information about the DAS, its activities, and the special tax-deductible funds is available on the DAS web site at www.thedas.org.



**APPLICATION FOR MEMBERSHIP TO THE
DENVER ASTRONOMICAL SOCIETY**

New Renewal

Name: _____
 Address: _____
 City, State, Zip: _____
 Phone numbers: Home () Work ()
 E-mail Address: _____
 Occupation: _____
 Other Interests: _____
 (Students Only) School: _____ Grade: _____

Do you want to download the newsletter in PDF format from our website instead of by postal mail?
 Yes No

Do you want the above information excluded from the yearly roster?
 Yes No

Please Circle All That Apply:

Regular Membership: \$35 Students: \$12 (*Students under age 23*)
 \$ _____

Astronomy Magazine/\$34
 Sky & Telescope Magazine/\$32.95
 \$ _____

Van Nattan Scholarship Fund \$ _____

Public Outreach Fund \$ _____

Total Amount Paid \$ _____

Please make donations to the Dark Sky Site Fund payable to the DAS EGKDS Fund and mail to Steve Solon, 9774 W. Elmhurst Place, Littleton, CO 80128-5199. Please make other amounts payable to the Denver Astronomical Society and mail along with this completed form to Brad Gilman, DAS Treasurer, 7003 S. Cherry St., Centennial, CO 80122-1179.



Denver Astronomical Society

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