



Sharing the Universe with our Community for over 60 years



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The Astronomical Society of Las Cruces (ASLC) is dedicated to expanding public awareness and understanding of the wonders of the universe. ASLC holds frequent observing sessions and star parties and provides opportunities to work on Society and public educational projects. Members receive the *High Desert Observer*, our monthly newsletter, plus membership to the Astronomical League, which includes their quarterly publication, *Reflector*.

Individual Dues are \$30.00 per year
 Family Dues are \$36.00 per year
 Student (full-time) Dues are \$24.00

Dues include electronic delivery of the *HDO*. Prorated dues are available for new members. Dues are payable to ASLC with an application form or note to: Treasurer ASLC, PO Box 921, Las Cruces, NM 88004

ASLC members are entitled to a \$5.00 (per year) Sky and Telescope magazine discount.

ASLC Board of Directors, 2014

Board@aslc-nm.org

President: Rich Richins; President@aslc-nm.org
 Vice President: Steve Shaffer; VP@aslc-nm.org
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 Director-at-Large: Jerry Gaber; Director2@aslc-nm.org
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 Director Emeritus: Walter Haas

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 Education: Rich Richins; Education@aslc-nm.org
 Grants: Sidney Webb; sidwebb@gmail.com
 Librarian: Brenner Fody; mebrenner@live.com
 Loaner Telescope: Ron Kramer; ronjkramer@aol.com
 Membership: Judy Kile; jkile@elp.rr.com
 Night Sky Network: *OPEN*

April Meeting

Our next meeting will be on April 25, 2014, at the DACC Main Campus, Room 141, Technical Studies Building, starting at 7:00 p.m.

Our guest speaker will be Carolo Vargas from the NMSU Astronomy Department. The title of his presentation is:

To Stack or Not to Stack:

Lessons from z=2.1 Lyman Alpha Emitting Galaxies.

Outreach

Outreach is a very important part of ASLC. We are always looking for more volunteers to help us educate the public. Even if you do not have a portable telescope to bring to the events, please consider attending our public outreach programs to help answer questions, share knowledge and point out constellations in the sky.

Events

ASLC hosts deep-sky viewing and imaging at our dark sky location in Upham. We also have public in-town observing sessions at both the International Delights Cafe (1245 El Paseo) and at Tombaugh Observatory (on the NMSU Campus). All sessions begin at dusk.

At our Leasburg Dam State Park Observatory, we hold monthly star parties. Located just 20 miles north of Las Cruces, our 16" Meade telescope is used to observe under rather dark skies.

Please see *Calendar of Events* for specific dates and times.

Annual Dues

Please note that annual dues were due in January. Please contact our Treasurer, Patricia Conley (treasurer@aslc-nm.org) for further information. Dues can be paid at the next meeting or via mail, sent to Treasurer ASLC, PO Box 921, Las Cruces, NM 88004.

Committee Chairs

Observatory:

Leasburg Dam: Ron Kramer; ronjkramer@aol.com
 Jerry Gaber; jerrygaber@gmail.com

Tombaugh: Steve Shaffer; VP@aslc-nm.org

Outreach: Chuck Sterling; csterling@zianet.com

Web-Site: Steve Barks; steve.barks@gmail.com

HDO Editor: Ron Kramer; ronjkramer@aol.com

Saturday, March 22; Leasburg Dam Park

Dave Doctor put in a long day. He set up his 80mm refractor with a hydrogen-Alpha filter that he installed himself. He also has a solar finder that he made from a tube. It looks as good as the ones that come from Coronado. He also assisted Jerry Gaber in the observatory for the evening session. Sid Webb brought his 10-inch GOTO Dobsonian which was, once again, going to. Ron, I know it is bad English.

Rich Richins set up near the observatory and stayed to do some imaging of the Horse's Head after the observing session. I did not mess up one of his images with the laser pointer like I did last time. You are welcome Rich.

Chuck Sterling brought the 10-inch SC. He set up one the grass, away from the observatory, and sought out a number of objects including Jupiter, the Orion Nebula and the Whirlpool Galaxy among other things.

I brought the 8-inch Schmidt Cassegrain which I had not used for awhile. Everyone had a successful session. Well, all most everyone. I had a constant problem of the cable from the battery to the mount pulling loose a number of times. It forced me to put in another cable which fixed the problem. Next, I had trouble doing an alignment because the Telrad was not working and I had trouble finding anything with the right-angle finder. I finally fixed that problem by discovering that the batteries in the Telrad had come loose. I did not find a solution to the frustration problem, but was finally able to get the Double Cluster available for viewing.

Saturday, April 5; MoonGaze

Chuck Sterling set up two telescopes, the 100mm refractor and the 10-inch Schmidt. I had the 125mm ETX. We had clear skies until about 10:30 PM, when we decided to call it quits.

We had a good view of the International Space Station, the Pleiades, Jupiter and, for the first time in a couple of years, Mars. Mars was still pretty low in the sky, so we did not really see any detail. There may have been an occasional view of dark markings, but not good enough to be sure about what me might be seeing.

Steve Shaffer was busy at the Tombaugh Observatory both Friday and Saturday nights.

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Calendar of Events (Mountain Time - 24 hr. clock)

APR 17	01:42	Moon - Saturn Conjunction
19	Dusk	OUTREACH; Leasburg Observatory
22	01:52	Last Quarter Moon
22	11:12	Lyrid Meteor Shower
24	19:00	OUTREACH; Oñate High School
25	17:16	Moon - Venus Conjunction
25	19:00	ASLC MEETING; Room 141, DACC Main Campus, Technical Studies Bldg.
26	Dusk	DSO Upham
29	00:14	New Moon
MAY 02	09:51	Moon - Aldeberan Conjunction
03	dusk	OUTREACH: MoonGaze; International Delights Restaurant
05	00:26	Eta Aquarids Meteor Shower (3 nights)
06	21:15	First Quarter Moon
09	21:00	OUTREACH; Tombaugh Observatory
10	11:50	Saturn Opposition
10	14:00	OUTREACH; Leasburg Dam State Park Observatory
10	21:00	OUTREACH; Sky Safari at Tombaugh Observatory
12	06:47	Moon - Spica Conjunction
14	06:41	Moon - Saturn Conjunction
14	13:16	Full Moon

21	06:59	Last Quarter Moon
23	19:00	ASLC MEETING; Room 141, DACC Main Campus, Technical Studies Bldg.
24	00:15	Possible Meteor Storm from Comet LINEAR debris trail
24	18:00	OUTREACH; Music Under The Stars, Leasburg Dam State Park Observatory
25	09:43	Moon - Venus Conjunction
25	7 days	Texas Star Party
28	12:40	New Moon
31	dusk	OUTREACH; Observing at Upham

Be sure to visit our web site for the latest updates: www.aslc-nm.org

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March Meeting Minutes

by John McCullough

Show & Tell

David Doctor presented an *Atlas of the Messier Objects* by Ronald Stoyan that includes some of Messier's notes and diagrams. Rich Richins followed by exhibiting an on-axis guider for long-exposure photography/imaging. He hasn't used it yet but plans to use it this weekend at Leasburg Dam State Park (LDSP).

Rich opened discussion of Astronomy Day 2014 on 10 May. The Society's participation in this event has varied from one year to another. Rich would like to hold some activities this year at LDSP. Jerry Gaber wondered about day-time activities during that Saturday. Such activities could be promoted or held at the Mesilla Valley Mall, Farmer's Market, and/or Museum of Science and Natural History. The El Paso Astronomy Club could also be invited to participate in both day and evening activities. As much publicity as possible should be provided to the public leading up to any events. It was suggested that one of the "excess" telescopes in the Loaner Telescope program could be offered as a give-away. There was also discussion about a telescope-making workshop or selling 4-inch Dobsonians or "Galileo-like" telescopes. Children/young people activities and snacks were mentioned as possible attractions. Ron Kramer will check to see what, if any, materials are available through NASA.

Call to Order

Rich Richins, President, Astronomical Society of Las Cruces (ASLC, the Society), called the March business meeting to order at 7:41 p.m., 21 March 2014, Room 141, Doña Ana Community College (DACCC), Las Cruces, New Mexico.

President's Comments

The President, Rich Richins, welcomed the group to tonight's meeting. There were no new members or guests present at tonight's meeting.

Secretary's Report

Rich Richins reported the minutes for the February meeting had been submitted by the Secretary, John McCullough, for publication in the March issue of the Society newsletter, the *High Desert Observer* (HDO). If there are no corrections or discussion, Rich asked that the minutes be accepted as submitted. Ron Kramer moved that the minutes be accepted as published, Bert Stevens seconded and the motion passed by acclamation. John asked that members register their attendance on the roster at the room entrance. There was not an additional Secretary's report.

Treasurer's Report

The Treasurer, Trish Conley, reported on the status and balances of the Society's accounts, including receipt of a \$200 donation for outreach. Other income received since last month's report has been in the form of new and renewing member dues. There was not an additional Treasurer's report.

Committee Reports

Outreach

Chuck Sterling, Outreach Coordinator, announced two (2) upcoming school star parties: 15 April at Sierra Middle School and 24 April at Oñate High School. There are also events planned at LDSP on 22 March and 19 April.

Membership

John McCullough, Committee Chairman, announced that he will step down as Chairman in favor of Judy Kile. Judy said she would like to make the Society more personable/sociable. She has some information that she would like to distribute to new as well as current members. Judy may also send a form to current members to update personal or emergency contact information. Rich Richins noted that he would also like to build the social aspect of the Society. Trish Conley will provide the new membership form to Rich and Steve Barks to post on the Society's web site.

Apparel

Ron Kramer, acting Chairman, and Rich Richins presented a range of potential colors for a new run of golf shirts with the Society logo. A dark/forest green was selected by the members present for the new shirts.

Loaner Telescopes Program

Ron Kramer, Program Coordinator, reported there are six (6) telescopes active in the program. These include recently donated telescopes. The member usage fee is \$10/month or repair a non-working telescope in exchange for two months use. He is also considering auctioning one or more of the telescopes to the membership as a fund raising effort or waiving the monthly fee if a member commits to using a loaner telescope for outreach. Other options are open for discussion.

Rich Richins entertained a motion to adjourn. Ed Montes moved to adjourn the business portion of tonight's meeting, Ron Kramer seconded. The business meeting concluded at 8:09 p.m..

Presentation

This month's presentation was by Steve Barks, ASLC member. His topic was "Messier Marathon for Fun and Profit." Steve started by describing his history of participation in Messier Marathons starting in Maryland in 2000. The first annual ASLC Messier Marathon was held at the Upham DSO site in 2004. The 2014 (11th Annual) Messier Marathon will be held at the ASLC Observatory at LDSP on 28 March, with 29 March as a backup. French astronomer Charles Messier started his catalog of "faint fuzzies" with the Crab Nebula (M1) in 1758. The current Marathon consists of 109/110 objects (M101 and M102 are duplicates). The opportunity to view all Messier objects between dusk and dawn at 32° latitude (i.e., Las Cruces) occurs in late March/early April close to the new Moon. After discussing available resources and techniques for a successful Messier Marathon, Steve recapped some pertinent information for this year's Marathon:

Prime Date: 28 March 2014 (start at dusk)
Backup: 29 March 2014 (start at dusk)
Location: The ASLC Observatory at LDSP
Updates: ASLC yahoo group
Extras: Potluck prior to the start of the Messier Marathon (sandwiches provided by the Society);
Certificates of Participation; award pins for viewing all 110 objects, presented at the April meeting

The March meeting of the Astronomical Society of Las Cruces concluded at 9:07 p.m..

-Respectfully submitted by John McCullough, ASLC Secretary

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Back at the Telescope

by Berton Stevens

Our speaker at the February ASLC meeting, Dr. Chris Churchill (NMSU Astronomy Department), was telling us

about galaxies and what we know about them. During his talk, he mentioned dark energy and dark matter and said he would not be surprised if we discovered that dark energy and dark matter were essentially the same as epicycles and the motions of the galaxies and the universe were the result of something that we have not discovered yet.

Epicycles, as you probably know, were an attempt by early astronomers trying to understand the motions of the planets in an Earth-centered system using actual observations. In their model, the Earth stood at the center of our planetary system and the planets, Sun and Moon were attached to crystal discs that rotated around the Earth at different speeds.

With Earth as the center, the crystal discs should turn at a uniform speed, which would mean that the planet attached to the disc should also move in the same direction and with the same speed. But as we all know, while the Sun and Moon always move forward (eastward or prograde), their speeds will vary. The other planets do not always move in the same direction. Mercury and Venus go forward and backward near the Sun, while Mars, Jupiter, and Saturn mostly move forward, they will stop and then go backward (westward or retrograde) for a while. These three will then stop and resume forward motion.

Astronomers came to the conclusion that the planets were not directly attached to the crystal discs, but were attached to smaller discs that were attached to the crystal discs. As the small disc turns, the planet will go faster than the crystal disc and then stop and travel backward as the planet gets on the back side of the disc. The center of the large discs (called deferents) was not the Earth but a point called the eccentric that was near the Earth. This allowed for the changes in speed that today we know are related to the motion of the planet in its elliptical orbit, traveling faster at perihelion and slower at aphelion.

This was a makeshift solution that mostly worked and seemed to explain everything well enough that it remained the accepted explanation for over two thousand years. We now know that the planets orbit the Sun and travel in elliptical orbits. This explained all the motions with greater simplicity and elegance. There was still a minor problem with Mercury that could not be explained by this model. It took Einstein and Relativity to completely explain Mercury's motion by refining our understanding of gravity and allow highly accurate predictions of Mercury's future positions.

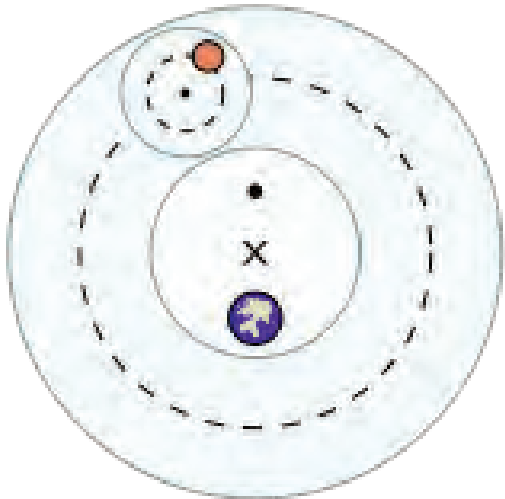
So how does this relate to dark energy and dark matter? Dark matter is an attempt to explain the internal motions of stars in a spiral galaxy. Stars near the center should move faster than the stars at the outer edge of a galaxy. But when we measure the motions, we discover that they are all about the same. This implies that there is a halo of matter around the galaxy that we cannot see. Since we cannot see it, this matter must not interact with the electromagnetic spectrum, so it neither absorbs nor emits light, yet there must be quite a bit of this matter to affect stellar motion in a whole galaxy.

Meanwhile, galaxies are moving apart as the universe expands. This expansion was started by the Big Bang and has continued. The mass of the universe should be slowing this expansion as their mutual gravity tries to pull them together. Actual measurements show that the expansion rate is actually increasing, not decreasing. The hypothesis is that there is a dark energy pushing the universe apart more strongly than gravity is trying to pull it back together.

So we have two things, dark matter and dark energy, whose effects we can see, but we cannot see them directly. We are certain that there are almost invisible objects like neutrinos, which hardly interact with anything at all and we have plenty of invisible forces (like magnetism). But do dark energy and dark matter actually exist or are they just constructs which, like epicycles, are a conservative answer to the observations we make of the universe around us?

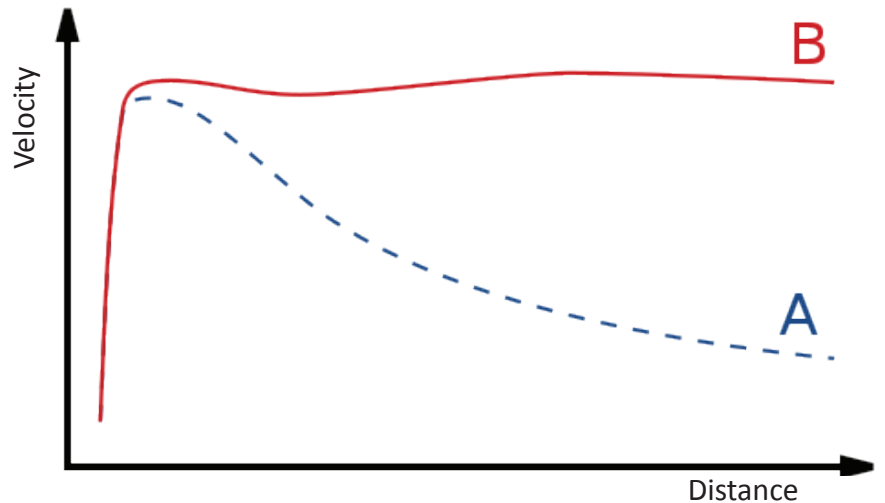
No one really knows the answer. While it is possible that the two darks exist, they are an attempt to explain anomalies in the observed actions of gravity without changing the laws of gravity. Perhaps we do not understand gravity as well as we think we do. Perhaps over large distances, there are other parameters in the gravitational equation that we do not recognize. There may be a young genius somewhere that will change our way of looking at the universe with a new theory of gravity that will build on Newton and Einstein's theories to explain these

observations. Only time will tell.



In a schematic view of the Ptolemaic system, a planet is on an epicycle (smaller dashed circle) which in turn rides on a deferent (larger dashed circle). To adjust for the non-uniform motion of the planet, the deferent centers on the eccentric (X), and not on the Earth. However Ptolemy found that the rate at which the deferent revolved was not constant unless he measured it from another point at an equal distance from the eccentric, which he called the equant (larger black dot). It was the angular rate at which the deferent moved around the equant that was constant. It was the addition of the equant that distinguished the Ptolemaic system.

This is a plot of the speed of a star moving around the center of its home spiral galaxy against the distance from the center of the galaxy. Calculations using the visible matter in the galaxy render the blue curve marked "A". The actual observations are shown by the red line "B". Astronomers hypothesized that there is a large halo of dark matter around the galaxy that changes the predicted curve into the actual one.



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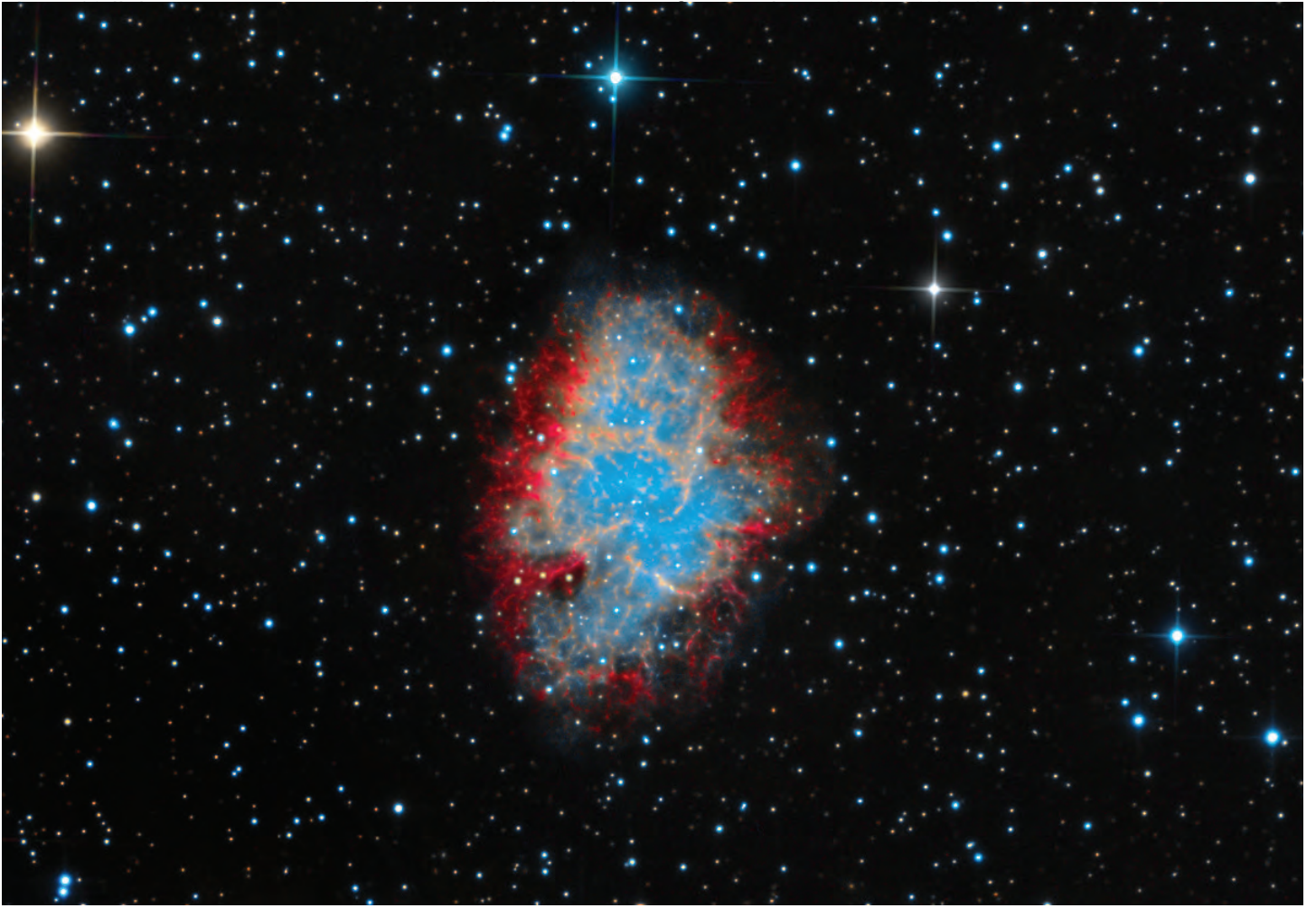
Image of the Month

April's image of the month, on the next page, was taken by our very own David Doctor. Using an Astrotech 10RC with a SBIG ST8XME self-guided camera on a Paramount mount, this image consists of approximately 8 hours of unbinned luminance 12 minute subs, 8 hours of H- α unbinned 15 minutes subs plus 8.8 and 10 hours respectively of binned RGB 12 minute subs. *The Sky 6*, *CCDSOft*, *FocusMax* and *CCD Autopilot* software was used. Processing was done with *PinInsight*.

The Crab Nebula, listed as M1 in Messier's objects and also known as the Crab Nebula, is the remnant of a supernova which was visible in the daytime, as seen by Chinese astronomers in the year 1054 (A.D.). It is estimated that the nova reached magnitude -7, and was visible for about 2 years after its first observation.

Originally identified by John Bevis in 1731, this object can be seen with binoculars and modest telescopes. Larger instruments bring out some of the details shown in the image. It was rediscovered by Charles Messier in 1758 as he was chasing a comet.

This object, located in the constellation Taurus also contains the first neutron star found, by Franco Pacini, in the 1960's. Today we know that the nebula contains a pulsar and is about 6,500 light years from Earth. It measures



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