M31 by LAS member Brian Kimball

Longmont Astronomy Society Newsletter
October 2009

From the President:

Our next meeting is 7 pm this Thursday, October 15 at the Front Range Community College. The speaker will be Dr. Dennis Ebbets from Ball Aerospace and Technologies Corp. in Boulder, CO. Dr. Ebbets has worked primarily on science instruments for NASA's Hubble Space Telescope, and on design studies for instruments for other NASA missions. He will talk about the design and construction of the Hubble Space Telescope. Its hardware, its launch into orbit, and its use by astronomers here on Earth.

Thanks to all who came out to Overland Middle school star party last Friday. Marcia had a nice dinner for us again this year. Unfortunately it was pretty difficult to much astronomical observing in the snow.

Next school star party is for the 3rd to 5th grade class at Loma Linda Elementary School in Longmont on Friday, November 6th from about 5:30 to 7:30 pm mst. About 125 kids and parents expected. Scopes and volunteers are needed of course.

Its once again time to give some thought about volunteering to be LAS officer. All positions are open for election each year. Nominations for next year's officers will be at the November 19th meeting. LAS has always had a great group of volunteers who provide their time and labor to operate the club and provide equipment and expertise for local star parties and events for schools and other organizations.
Editor's Note: anyone volunteering to be the newsletter editor will be provided with a supply of cookies, and this week's special – homemade bread!

In the sky this month:

Meteor Showers:
Leonids should be outstanding this year, with some predictions running into the 100/hour range at the peak time during the early hours of November 17th. A New Moon should make it all worthwhile.
Planets
Mercury- evening star, but low in the mountains.
Venus-Still bright in the East at sunrise, but gaining on the Earth and becoming more distant on the far side of the Sun
Mars- Finally getting somewhere now that its just a couple of months from opposition, brightening to mag 0.0 by late November
Jupiter- still the highlight of the evening sky, high in the south at sunset and just itching to be shown to a bunch of elementary kids.
Saturn-rising about 4 AM now, it improves through the month, although the rings are still pretty much edge-on.

Interesting Stars/Galaxies
Comet C/2007 Q3 (Siding Spring) passes in front of the Coma -Virgo galaxy cluster in mid November. Look for some of these pictures to be featured in the magazines in a couple of months.

This week is Earth Science Week – if you want to look at some of the videos (mostly using data from NASA satellites), try http://climate.nasa.gov/esw/

Club Calendar:
Thursday, Nov 19 – next meeting, community room of FRCC at 7:00
Friday, Nov 6 – educational outreach at Loma Linda Elementary School starting at 5:30, bring a scope or two. As usual, it will be cloudy that night....

Fiske Planetarium:
Ask for an "Adult Free" coupon at Fiske's ticket window! Anyone under age 18 with paid admission qualifies to bring an adult to Fiske at no cost! You are welcome to photocopy and use these coupons until December 31, 2009.

+ Colorado Skies: Extraterrestrial Life (with Julia Demarines) (October 15, 2009, 7:30 pm)
Join us for an evening under the stars learning about the possibilities of life on other worlds.

+ Secrets of Polynesian Navigation (with Dr. John Stocke) (October 16, 2009, 7:30 pm)
Explore how ancient Polynesians explored and settled the largest nation on Earth by successfully navigating over thousands of miles of the Pacific Ocean without the use of compasses or modern navigati...

+ Colorado Skies: Our Dynamic Sun (October 22, 2009, 7:30 pm)
Enjoy a night under the Stars at Fiske Planetarium with a special presentation about our dynamic sun with Matt Benjamin.

+ More on the Mysteries of Chaco (with Dr. Anna Sofaer) (October 23, 2009, 7:30 pm)
High on a butte in New Mexico's Chaco Canyon at summer solstice in 1977, researcher Anna Sofaer encountered an astonishing phenomenon -- a single shaft of light bisecting a spiral petroglyph, crafted ...

+ Life of the Universe (with Dr. John Bally) (October 29, 2009, 7:30 pm)
What was the Big Bang? What came before? Why is the universe so hospitable to life? What is the connection between the microscopic quantum world and the cosmos? I will review recent discoveries about c...

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Internet Resources:
Calling all imaging LAS members:

Go on Itunes and download the video from the BBC Sky at Night magazine. You're looking for episode 17 – the Sky Photographer of the Year. 20 of the best images submitted were in the finals, and there are interviews of a few of the winners in addition to some nice pictures.

What's next? NASA has written a video game!
Imagine the thrill of floating out of the International Space Station and into the emptiness of space and what it would be like to work on the orbiting science laboratory. NASA has developed a new video game, Station Spacewalk, to give young people an "out of this world" virtual opportunity to experience the thrill of working on a mission to the International Space Station from their computers.

This new video game is based on actual work astronauts performed during the course of several NASA missions. The game is part of NASA's broader educational outreach effort to engage and inspire students in science, technology, engineering and mathematics.

"It's all about getting the next generation excited about space exploration," said Chris Kemp, chief information officer at NASA's Ames Research Center at Moffett Field, Calif. "Players, or 'astronauts,' can virtually navigate their way through mission critical tasks. This game provides players a sense of the magnitude of complexity and thrill associated with NASA missions."

As an astronaut, players visualize a detailed virtual mock-up of the International Space Station that was created for NASA's space station program. Players participate in four critical spacewalks that provide power to the station to keep it operating at full capacity. Players must complete their tasks quickly and carefully, before the air supply runs out.

Players begin by managing their way out of the airlock. The first task is to install the S6 truss segment, the long "backbone" of the station that supports the solar arrays. The player can open the S6 solar arrays, an essential task because they provide photovoltaic energy for the space station. These tasks are based on the shuttle mission to the space station that delivered the segment and deployed the solar arrays.

Players then can use a robotic arm to repair a tear in a solar array, a task NASA astronauts performed during another shuttle mission. When the work is done, players must carefully collect tools that are floating in space.

To take a virtual spacewalk in the Station Spacewalk game, visit:
http://www.nasa.gov/multimedia/3d_resources/station_spacewalk_game.html

For more information about NASA's education programs, visit:
http://www.nasa.gov/education

For more information about the International Space Station, visit:
http://www.nasa.gov/station

Information about the STS-119 mission, which deployed the station's S6 solar arrays, is available at:
http://www.nasa.gov/mission_pages/shuttle/shuttlemissions/sts119

Information about the STS-120 mission, which included repairs to a damaged solar array, is available at:
http://www.nasa.gov/mission_pages/shuttle/shuttlemissions/sts120

Galaxy Zoo:

From the Galaxy Zoo, this newsletter:
Dear Zooites

Fantastic news! Thanks to your hard work over the last few months, we've reached our initial target of roughly 40 million Galaxy Zoo 2 classifications via http://www.galaxyzoo.org. We're not quite satisfied yet, though - after looking at the data and introducing more detailed images we think we need to reach 60 million. Each and every click helps, and each time you visit the site you're helping us understand the Universe a little better.

I'm writing this on top of Palomar mountain, home to some of the world's most famous telescopes, including the one that supplies images of possible exploding stars to our website at http://supernova.galaxyzoo.org. Over the next few days, astronomers are once again standing by in the Canary Islands to follow up on likely candidates, but first we need your help to identify the best targets.

Our last experiment back in August was a huge success, and so this time we're looking at a much larger set of data in an attempt to work out just how common each type of supernova really is. Please take a few minutes to go to the site, read the new and improved tutorial - and then start supernova hunting.

Thanks to you, the Galaxy Zoo team have been able to make a whole host of discoveries about the Universe. To keep up with how we're using your results, visit the blog at http://www.galaxyzooblog.org .

Chris & the Galaxy Zoo team.

P.S. Don't forget, you can check the total number of classifications on our Zoonometer at http://www.galaxyzoo.org/zoonometer

Upcoming Space Missions:

NASA gives CU $2.4 million for rockets

Camera Staff

Posted: 10/15/2009 12:29:44 PM MDT

NASA has awarded the University of Colorado $2.4 million to design, build and fly four rocket payloads carrying ultraviolet telescopes to probe interstellar weather.

The rockets will be launched from the White Sands Missile Range in New Mexico beginning in 2010.

The payloads -- ultraviolet telescopes known as spectrographs -- are being built at CU's Center for Astrophysics and Space Astronomy.

Note to Vern: maybe get these guys for a talk?

"Look Ma, No Parachute!"

10.15.2009

October 15, 2009: How do you fly on a world with no atmosphere? Wings won't work and neither do propellers. And don't even try that parachute!

NASA engineer Brian Mulac has the answer. "All it takes is practice, practice, practice," he says. "And of course, thrusters."

The space agency is perfecting the art using a prototype lunar lander at the Marshall Space Flight Center:

"What we've got here is a 'flying testbed' to help us to learn how to hover[1] and land on the Moon," says Mulac. He's conducting the tests in collaboration with other engineers from NASA, the John Hopkins University Applied Physics Laboratory, and the Von Braun Center for Science and Innovation.

The electric-blue jets emerging from the lander look like some kind of futuristic high-tech gas, but in fact they are just ordinary compressed air.

"They look blue in this photo because the cold air coming out of the thrusters is interacting with our 'nice' Alabama humidity," explains Mulac. "The plumes are like miniature clouds. They contain ice crystals that scatter blue light."

The center of the prototype has one big thruster to cancel 5/6ths of Earth's gravity. That leaves 1/6 g for the rest of the thrusters--the same as gravity on the Moon.

"This prototype's thrusters are in the same configuration as they would be on the flight robotic lunar lander, so the control algorithms and dynamics are similar," says project manager Julie Bassler.

"That's important," adds engineer Danny Harris, "because we're validating the guidance, navigation, and control system needed for a successful lunar landing."

And if the lander gets out of control? "That never happens," says Mulac, "but just in case, we've surrounded the test chamber with a huge net." The net is visible in the picture as a background network of criss-crossed ropes and would intercept the lander if it ever strayed off course.

So far, the prototype has passed all tests with flying colors: "Once we start a test, it's all autonomous," Mulac continues. "An onboard computer directs the thrusters. The flight profile is pre-programmed. We tell the craft where to go and it goes there on its own."

"By conducting these tests, we gain an appreciation for the design of missions that land on airless bodies," says NASA planetary scientist Barbara Cohen. "Many scientifically interesting places in the solar system are airless. Besides the Moon, we'd like to visit Mercury, asteroids, Europa and other airless destinations. What we learn here could have a broad application."

"It's quite an engineering problem to solve," says Mulac. "With our test bed, we're showing we can do it successfully."

Ares test coming up:

On Oct. 27, 2009, NASA launches the first flight of a new era with the flight test of the Ares I-X rocket. In preparation for the flight test, NASA has launched a new Web site to involve the public in this exciting and historic event.

The “MyExploration” Web site encourages visitors to learn, explore and participate in the upcoming mission. NASA is asking the public to upload 60-second videos that finish the statement “Space exploration is important because …” These videos will be posted on the site for others to see.

The “MyExploration” Web site also has links to Ares information on the Web, including links to the latest news and information on Flickr, Facebook, Twitter and YouTube.

To learn more, upload your video, view videos submitted by others, and take the "MyExploration" quiz, visit http://www.nasa.gov/myexploration.

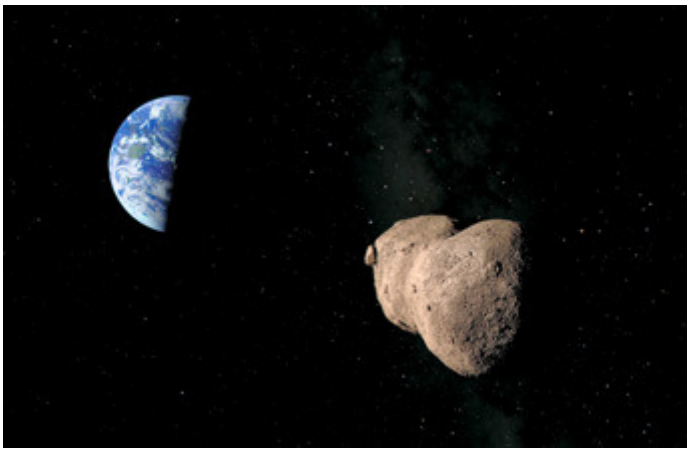
Present Missions:

Messenger Mission has passed Mercury for the last time – the next visit will settle into its final orbit around the speedy planet. You can visit the images from this final pass at http://www.nasa.gov/mission_pages/messenger/multimedia/index.html

Humor Dept:

We're safe (for now....)Less Ado About Apophis

Every so often, Earth is hit by a small chunk of asteroid that self-destructs harmlessly in its atmosphere. Fortunately, for the moment all the beefier asteroidal bodies in Earth's vicinity seem to be whizzing by harmlessly — planetary astronomers continue to tell us that no known body has a significant chance of hitting home for the foreseeable future.



On Friday the 13th in April 2029, a 900-foot-wide asteroid named Apophis will pass close enough to Earth (about 25,000 miles) to briefly appear as a 3rd-magnitude star in the night sky.
Dan Durda
The one known body that *has* been causing them a little late-night heartburn is 99942 Apophis. Roughly 900 feet (270 meters) across, Apophis is big and massive enough to do some real damage here, walloping us with the explosive equivalent of 5 megatons of TNT.

NASA's number-crunchers have found that it has a 1-in-45,000 chance of striking Earth on April 13, 2036. But that mildly unsettling prediction hadn't been updated since 2006, and yesterday the Minor Planet Center issued recent observations and a new orbit.

Apparently we can all breath a little easier. This morning I heard JPL dynamicist Steven

Chesley announce that the chance of an impact has dropped to something like 1-in-250,000.

– from the Sky & Telescope weekly newsletter