

Inside Orbit

April 2008

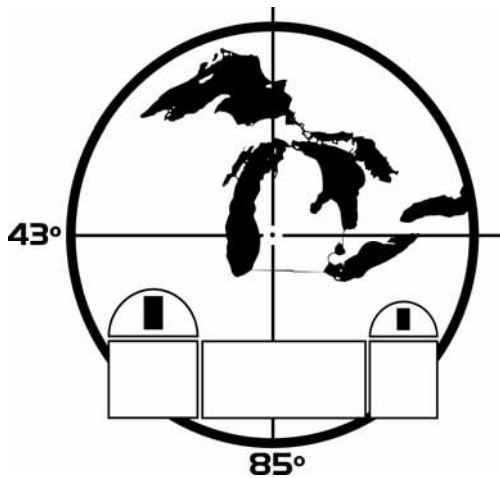
Volume XXXIV - Number IV

A Publication of the Grand Rapids Amateur Astronomical Association

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Grand Rapids Amateur
Astronomical Association

In This Issue:

April Meeting Information

*NASA Astronaut David C. Leestma will speak to the GRAAA on Wednesday, April 16. The title of his talk is "**Flying in Space: What it's Like and What's Ahead.**"*

Calendar of Events & News Notes

Happenings in the GRAAA and the astronomical community

NASA's Space Place - "Tracking Wildlife from Space"

The wonders of the world of science and technology, brought to you by NASA and the Jet Propulsion Laboratory

Chaffee Planetarium Sky Shows

Note: Any views and opinions expressed by the authors in this publication are not necessarily those of the GRAAA or its members.

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www.graaa.org

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APRIL MEETING NOTICE
Wednesday, April 16, 2008
7.30pm - Public Museum, Meijer Theater

***Flying in Space:
What It's Like and What's Ahead***

David C. Leestma (Captain, USN Ret.)

Manager - Advanced Planning Office, Johnson Space Center

As a NASA astronaut, Captain David Leestma flew three shuttle missions, and was fortunate to be one of the few human beings to take part in EVA's (spacewalks). His missions aboard the shuttles *Atlantis*, *Challenger*, and *Columbia* helped to expand our knowledge of space, human spaceflight, and our planet.

As Manager of the Advanced Planning Office at Johnson Space Center, Captain Leestma is instrumental in charting the future course of human spaceflight throughout the solar system, as part of NASA's mandated "*Moon, Mars, and Beyond*" program.

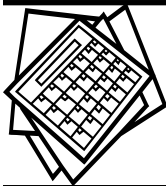


About the Speaker:

Captain David Leestma was selected as an astronaut in 1980, and has flown three missions on the space shuttle. He has served as CapCom for shuttle missions, and also been in charge of various departments inside NASA.

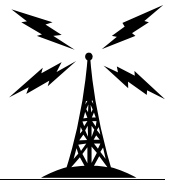
Captain Leestma is currently the Manager of the Advanced Planning Office at John Space Center, Houston. His position entails heading a team involved in strategy for development and implementation of this country's most ambitious of all human space programs: return to the moon and an expedition to Mars.

As usual, all members are invited. This meeting is open to the public, so get there early for a good seat. All are encouraged to attend.



News and Events

(Latest News and Events always online
at www.graaa.org)



The General Meeting of the GRAAA will be held on Wednesday, April 16th at the Public Museum Meijer Theater starting at 7.30pm. The program, beginning at 8.00pm, will feature NASA Astronaut David C. Leestma, who will speak on **"Flying in Space: What It's Like and What's Ahead"**

For more information, see the previous page, and the dedicated page on the club's website.

PUBLIC NIGHTS FOR APRIL: The Observatory will be open - *clear skies only* - on Saturday, April 26th. Times are 9.00pm-12.00am. Come out and help if you can.

MONTHLY MEMBERS STAR PARTY: We will start up the 2008 season on Saturday April 19th. More information is online, and via the reminder email. Pray for clear skies.

MEMBERSHIP RENEWALS: May is the usual month for most memberships to expire (except those who joined at other times of the year). Everyone should have gotten a renewal notice in the regular mail, so now we will remind you here and via email until everyone is paid up. You can download a renewal form from the Member's Area of the website.

MAY INSIDE ORBIT: The deadline for submissions to the May 2008 *Inside Orbit* is April 19th. If you'd like to write anything, please feel free to do so. The editorial staff is very relaxed concerning submissions, and take anything that's remotely interesting. In fact, they will almost guarantee that it will be published.

ARTHUR C. CLARKE, 1917-2008: On March 18th, Arthur C. Clarke, the man who gave us HAL, Rama, communication satellites, and hundreds of other books both science fact and science fiction, passed away. He was 90.

NASA SATELLITE DETECTS NAKED-EYE EXPLOSION HALFWAY ACROSS UNIVERSE: A powerful stellar explosion detected March 19 by NASA's *Swift* satellite has shattered the record for the most distant object that could be seen with the naked eye.

MARYLAND LED TEAM FINDS OLDEST KNOWN ASTEROIDS: Using visible and infrared data collected from telescopes on Hawaii's Mauna Kea, a team of scientists, led by the University of Maryland's Jessica Sunshine, have identified three asteroids that appear to be among our Solar System's oldest objects.

SPRING IS AURORA SEASON: What are the signs of spring? They are as familiar as a blooming Daffodil, a songbird at dawn, a surprising shaft of warmth from the afternoon sun. And, oh yes, don't forget the aurora borealis.

CRAFTY TRICKS FOR FINDING MOON WATER: Bright gray, crater-pocked mountains taller than Mount McKinley. Abyssal craters that could swallow several Grand Canyons whole. Recent radar maps of the Moon's southern pole revealed a dramatic, jagged landscape that astronauts could someday call home. But unfortunately, these radar images didn't provide any new information about something that would make living at the lunar pole much easier: frozen water.

NASA MISSION FINDS NEW CLUES TO GUIDE SEARCH FOR LIFE ON MARS: NASA's *Mars Odyssey* orbiter has found evidence of salt deposits. These deposits point to places where water once was abundant and where evidence might exist of possible Martian life from the Red Planet's past.

CASSINI SPACECRAFT FINDS OCEAN MAY EXIST BENEATH TITAN'S CRUST: NASA's *Cassini* spacecraft has discovered evidence that points to the existence of an underground ocean of water and ammonia on Saturn's moon Titan. The findings, made using radar measurements of Titan's rota-

tion, will appear in the March 21 issue of the journal Science.

CASSINI TASTES ORGANIC MATERIAL AT SATURN'S GEYSER MOON: NASA's *Cassini* spacecraft tasted and sampled a surprising organic brew erupting in geyser-like fashion from Saturn's moon Enceladus during a close flyby on March 12. Scientists are amazed that this tiny moon is so active, "hot" and brimming with water vapor and organic chemicals.

ASTRONOMERS DETECT FIRST ORGANIC MOLECULE ON AN EXOPLANET: A team of astronomers led by Mark Swain of NASA's Jet Propulsion Laboratory, Pasadena, Calif., has made the first detection ever of an organic molecule in the atmosphere of a Jupiter-sized planet orbiting another star. The breakthrough, made with NASA's *Hubble Space Telescope*, is an important step in eventually identifying signs of life on a planet outside our solar system.

CASSINI FLIES THROUGH WATERY PLUMES OF SATURN MOON: NASA's *Cassini* spacecraft performed a daring flyby of Saturn's moon Enceladus on Wed., March 12, flying about 15 kilometers per second (32,000 mph) through icy water geyser-like jets. The spacecraft snatched up precious samples that might point to a water ocean or organics inside the little moon.

SPITZER FINDS ORGANICS AND WATER WHERE NEW PLANETS MAY GROW: Researchers using NASA's *Spitzer Space Telescope* have discovered large amounts of simple organic gases and water vapor in a possible planet-forming region around an infant star, along with evidence that these molecules were created there. They've also found water in the same zone around two other young stars.

BROWN SCIENTIST ANSWERS HOW PERUVIAN METEORITE MADE IT TO EARTH: It made news around the world: On Sept. 15, 2007, an object hurtled through the sky and crashed into the Peruvian countryside. Scientists dispatched to the site near the village of Carancas found a gaping hole in the ground.

SATURN'S MOON RHEA ALSO MAY HAVE RINGS:

NASA's *Cassini* spacecraft has found evidence of material orbiting Rhea, Saturn's second largest moon. This is the first time rings may have been found around a moon.

NEARBY STAR SHOULD HARBOR DETECTABLE, EARTH-LIKE PLANETS: A rocky planet similar to Earth may be orbiting one of our nearest stellar neighbors and could be detected using existing techniques, according to a new study led by astronomers at the University of California, Santa Cruz.

HIRISE CAMERA PHOTOGRAPHS AVALANCHES ON MARS: The University of Arizona-led High Resolution Imaging Experiment camera has taken the first-ever image of active avalanches near the Red Planet's north pole. The image shows tan clouds billowing away from the foot of a towering slope, where ice and dust have just cascaded down.

DARK HALOS DISCOVERED ON MERCURY: The surprises continue. Scientists studying the harvest of photos from the *MESSENGER* spacecraft's Jan. 14th flyby of Mercury have found several craters with strange dark halos and one crater with a spectacularly shiny bottom.

AURORAS IN BROAD DAYLIGHT: Imagine living on a planet where Northern Lights fill the heavens at all hours of the day. Around the clock, even in broad daylight, luminous curtains shimmer and ripple across the sky, mesmerizing anyone who bothers to look. News flash: Astronomers have discovered such a planet. Its name is Earth.

INFORMATION SPOT: A Clarke Orbit is an orbit directly above the Earth's equator (0° latitude), with orbital eccentricity of zero. It is commonly called a geostationary orbit. It was first postulated by Arthur C. Clarke in his 1945 article for the magazine "Wireless World" in which he first set out the principles of satellite communication with satellites in geostationary orbits.

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...news to be continued next month

Note: These articles are courtesy NASA Space Place Program at the Jet Propulsion Laboratory.

Tracking Wildlife from Space

by Patrick Barry

It's 10 o'clock, and do you know where your Oriental Honey Buzzard is?

Tracking the whereabouts of birds and other migrating wildlife across thousands of miles of land, air, and sea is no easy feat. Yet to protect the habitats of endangered species, scientists need to know where these roving animals go during their seasonal travels.

Rather than chasing these animals around the globe, a growing number of scientists are leveraging the bird's-eye view of orbiting satellites to easily monitor animals' movements anywhere in the world.

The system piggybacks on weather satellites called Polar Operational Environmental Satellites, which are operated by the National Oceanic and Atmospheric Administration (NOAA), as well as a European satellite called MetOp. Sensors aboard these satellites pick up signals beamed from portable transmitters on the Earth's surface, 850 kilometers below. NOAA began the project—called Argos—in cooperation with NASA and the French space agency (CNES) in 1974. At that time, scientists placed these transmitters primarily on buoys and balloons to study the oceans and atmosphere. As electronics shrank and new satellites' sensors became more sensitive, the transmitters became small and light enough by the 1990s that scientists could mount them safely on animals. Yes, even on birds like the Oriental Honey Buzzard.

“Scientists just never had the capability of do-

ing this before,” says Christopher O'Connors, Program Manager for Argos at NOAA.

Today, transmitters weigh as little as 1/20th of a pound and require a fraction of a watt of power. The satellites can detect these feeble signals in part because the transmitters broadcast at frequencies between 401 and 403 MHz, a part of the spectrum reserved for environmental uses. That way there's very little interference from other sources of radio noise.

“Argos is being used more and more for animal tracking,” O'Connors says. More than 17,000 transmitters are currently being tracked by Argos, and almost 4,000 of them are on wildlife. “The animal research has been the most interesting area in terms of innovative science.”

For example, researchers in Japan used Argos to track endangered Grey-faced Buzzards and Oriental Honey Buzzards for thousands of kilometers along the birds' migrations through Japan and Southeast Asia. Scientists have also mapped the movements of loggerhead sea turtles off the west

coast of Africa. Other studies have documented migrations of wood storks, Malaysian elephants, porcupine caribou, right whales, and walruses, to name a few.

Argos data is available online at www.argos-system.org, so every evening, scientists can check the whereabouts of all their herds, schools, and flocks. Kids can learn about some of these endangered species and play a memory game with them at spaceplace.nasa.gov/en/kids/poes_tracking.





ROGER B. CHAFFEE PLANETARIUM

Public Museum, Grand Rapids

Show Schedule April 2008

For General Audiences and Families:

TO BOLDLY GO – Famous explorers from across history tell the story of their voyages and discoveries in their own words. From China, to America, Antarctica and even a future voyage to Mars, visitors will hear the personal hardships and triumphs of exploration. **45 minutes**
SHOWTIMES: Daily at 2:00 p.m.

UNDER STARLIT SKIES – The planetarium operator takes the audience on a live tour of the night sky, finding the prominent stars, constellations, and planets visible tonight. Current astronomical events are also presented. **30-40 minutes**
SHOWTIMES: Saturday and Sunday at 3:00 p.m.

Added Value: This show is free with paid Museum admission; or arrive after 2:30 p.m. for the planetarium show only and pay only \$3.00/ person.

For Families and Children:

MAPPING THE SKY – See how ancient and modern people used the sky to navigate. Learn how the stars can be used to find directions and location on the Earth. **30 minutes**
SHOWTIMES: Saturday and Sunday at 1:00 pm

NOTE: The Chaffee staff may integrate celestial maps into Under Starlit Skies. In this event, *the Friendly Stars* will instead be run as the 1:00 show.

Laser Light Show Programming:

RUSH – In this all new show, a new lineup of Rush's greatest hits comes to the Chaffee Planetarium. **50 minutes**.

SHOWTIMES: Saturdays, 9:00 p.m.

WISH YOU WERE HERE – Welcome to the machine! The Pink Floyd's tribute to their former band member, the now deceased Syd Barrett, joins the Chaffee line-up with an array of breathtaking effects. Shine on you crazy diamond! **45 minutes**.

SHOWTIMES: Saturdays, 10:00 p.m.

**Grand Rapids Amateur Astronomical Association
Membership Application or Renewal Form**

DATE: _____

☐ **New Membership** ☐ **Renewal**

Please fill out the information below as completely as possible.
For Family memberships, please include all persons for whom membership is desired.

Please Print

Name: _____ Birthdate: _____

Name: _____ Birthdate: _____

Name: _____ Birthdate: _____

Name: _____ Birthdate: _____

Name: _____ Birthdate: _____

Name: _____ Birthdate: _____

Address: _____

City: _____ State: _____ Zip: _____

Home Phone: _____ Cell Phone: _____

E-Mail: _____

(Note: For Family members, if more than one e-mail address, please list others on back of application)

☐ **Adult** (18 or older, a Minimum of \$40.00) \$ _____

☐ **Student** (through 17 yrs old, a Minimum of \$25.00) \$ _____

☐ **Family** (all members of one family, a Minimum of \$50.00) \$ _____

(Note: Contributions greater than the minimum dues are considered a donation and are tax-deductible)

☐ **Observatory Endowment Fund** \$ _____

☐ **Miscellaneous Donations** \$ _____

(Note: Contributions to these funds are tax-deductible. Indicate amount of donation)

☐ **OBSERVATORY USER FEE:** (a Minimum of \$25.00 per user) \$ _____

(Contributions of more than \$25 will help meet repairs and upgrade of equipment costs.)

If you are a qualified user of the Veen Observatory, and wish to remain so,
check the box for **"User Fee."**

TOTAL ENCLOSED (From all categories above) \$ _____

Make Check or Money Order to:

GRAND RAPIDS AMATEUR ASTRONOMICAL ASSOCIATION (or GRAAA)

Mail to: Jerry Persha, GRAAA Treasurer
199 Smith St.
Lowell, MI 49331

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3308 Kissing Rock Ave. SE
Lowell, MI 49331-8918