



April 2006

Special points of interest:

- Spring is here!
- New Test Boosts Search for Extraterrestrial Life
- NASA's Spitzer Finds Hints of Planet Birth Around Dead Star

April Meeting:

Wednesday, April 19, 2006, 7:30 p.m.



Observing Programs:
How to make the most of the Astronomical League observing programs and earn awards.

Burley Packwood, Seattle Astronomical Society

Burley will explain why anyone living in rainy Seattle should attempt to get these awards--because YOU CAN and because IT'S FUN! He will explain what an observing award is and how he got ten observing awards in four years. This will be more of a practical nuts and bolts talk rather than a technical discussion. Questions are welcomed!

(For May meeting information, please refer to page 4...)

Meeting Information

Wednesday, April 19
7:30 p.m.

Physics-Astronomy Building
Room A102
University of Washington
Seattle

Come early at 7 p.m. for coffee and snacks and to visit with your fellow members!

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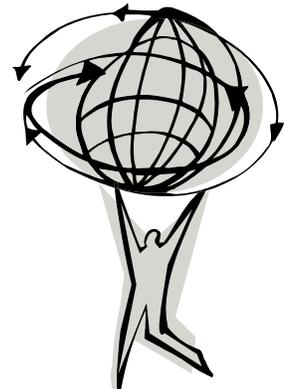
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From the President's Desk...

Spring is here!

By Thomas Vaughan

Spring is here!

Spring has arrived, and we find both the joy of clearer skies and the mixed blessings of later sunsets. Flowers bloom, bears come out of hibernation, and local astronomers bring their telescopes out of dark closets and garages.

As part of the seasonal re-awakening of astronomy, two local science institutions (the Pacific Science Center and the Museum of Flight) are hosting astronomy events in the next few weeks, and the SAS is a part of each.

Yuri's Night at the Museum of Flight - April 12th

In honor of the 45th anniversary of manned spaceflight, the Museum of Flight is hosting "Yuri's Night". This eclectic celebration includes food, music, and several guest speakers, including former astronaut Dr. Donnie Dunbar and Prof. Don Brownlee from the UW. The Seattle Astronomical Society will be there as well, with a table to tell visitors about the society.

The party starts at 7pm at the Museum, and goes until midnight. For more details and directions, see the Museum of Flight's website at <http://museumofflight.org/Display.asp?Page=yuri>

Open House at the UW - April 29th

As it does every Spring, the UW Astronomy department is hosting an Open House. This year, the theme is "Bringing Space Home". Don Brownlee is one of the featured speakers, and the Open House includes other events such as planetarium shows and (a perennial favorite) edible comets.

If you have a solar scope, bring it with you! The SAS will be setting up solar scopes in Red Square, and we can always use more. Even if you don't have a scope, do come by. The open house runs from 1-4pm (rain or shine). For more information and a schedule, see the Department of Astronomy's website: <http://www.astro.washington.edu/>

Table Mountain - July 20-22

The Table Mountain Star Party occurs during the Summer, but if you want to go you should register in the Spring! Registration is open now, see the Table Mountain website at <http://www.tmspa.com/>. This year, as every year, there will be a good number of SAS members attending.

Dark Sky Site

Fundraising and membership drives continue for our Dark Sky site! See the proposal and progress at <http://www.seattleastro.org/dark-sky.html>.

Happy Observing-

-Thomas



Meeting Coming Up Next Month

Topic: Ten Worlds - Everything that orbits the sun.

Speaker: *Ken Crowell*

On May 17, astronomer and author Ken Crowell returns to the SAS to give the talk for his new book: *Ten Worlds ? Everything That Orbits the Sun*. Dr. Crowell's books are among the most beautifully illustrated and well researched astronomy books available. His six previous books are *The Alchemy of the Heavens*, *Planet Quest*, *Magnificent Universe*, *See the Stars*, *The Universe at Midnight* and *Magnificent Mars*.

With the discovery of a new world larger than Pluto and three times farther from the Sun, our solar system now has *ten* known planets. During this talk, astronomer Ken Crowell takes you on an up-to-date tour of them all, showing spectacular color images of the planets and their largest satellites. He focuses on the latest developments beyond Neptune: astronomers have spotted more than a thousand icy objects in the Edgeworth-Kuiper belt, whose largest members are Pluto and the newly discovered tenth planet, 9 billion miles from the Sun. Furthermore, we now know of three moons orbiting Pluto and one moon orbiting the tenth planet. What are these far-off planets and their moons like? What will the newly launched spacecraft to Pluto tell us? And do Pluto and the tenth planet even deserve to be called planets?

Read more about Ken Crowell, his books and this talk at www.kencrowell.com.

SAS March 2006 Club Meeting Minutes



Announcements:

UW Astronomy Day is coming up on 4/29. It will be held in Red Square this year. SAS members are encouraged to bring a scope with a solar filter, or just show up and assist in the SAS presence.

The Dark Sky Site program continues to gain momentum. We are about 60% of the way towards the goal needed to start the search for a property.

The Table Mountain Star Party is coming up the weekend of 7/20. SAS will have a presence at this year's event. Members are encouraged to sign up early as only 700 people will be allowed to attend and it's filling quickly.

Five new SAS members were introduced and welcomed to SAS.

Mike Langley reminded members that the 1st and 3rd Wednesdays of each month are public viewing nights at the UW observatory, and SAS volunteers are always welcome.

An announcement was made regarding the Yakima Messier Marathon held which was to be held 3/25 and 3/26.

Beginners Topic:

Bruce Kelly provided the beginners topic – apparent relative sizes of the Sun and Moon. A beautiful but false photo, making the rounds on the internet, was used as an example of what not to believe.

Meeting Topic:

Victor Debattista, a post-doc at UW, gave a fascinating and in-depth presentation on barred spiral galaxies and the research he and others have conducted to better understand and detect them.

Meeting was adjourned around 9:00PM.

New Test Boosts Search for Extraterrestrial Life

[By T.J. Becker]



Researchers have confirmed that mandelate racemase reactivity could occur at subzero temperatures found on planets like Mars or moons like Europa (shown here). (NASA Photo)

Novel chemical reaction could serve as marker for life and simplify space instrumentation

Researchers have identified a new test case that could be used for evaluating extraterrestrial samples for evidence of life. The new test could ultimately allow the use of simpler analytical instrumentation on future space missions.

In the search for life on other planets, astrobiologists regard liquid water and chiral biomolecules to be critical components. “Yet because chiral molecules can be made synthetically as well as biologically, it’s not enough to just find them on other planets. We need to show a change of chirality over time,” said Tracey Thaler, a graduate student at Georgia Tech’s School of Chemistry and Biochemistry. Thaler works with Professor Andreas Bommarius in the School of Chemical and Biomolecular Engineering.

Thaler has investigated racemization – the conversion of an optically active compound to a racemic form, which has no optical rotation – as a new approach for analyzing samples in outer space. “Because this type of reaction is found only in biological systems, it could serve as a marker for extraterrestrial life,” Thaler explained. She presented results from the study on Thursday, March 30, at the 231st American Chemical Society National Meeting in Atlanta.

The study is part of a collaborative effort with Professor Rick Trebino’s research group in Georgia Tech’s School of Physics. The two research groups are trying to improve analytical instruments used on space missions, research that is sponsored by NASA.

Chromatography, the current method used to evaluate extraterrestrial samples on space missions, is a tedious process, Bommarius explained. Another drawback, researchers must know in advance the specific compounds they’re looking for, which

isn't always possible. In contrast, polarimetry, a method for measuring optical activity, does not require knowledge of the structure being analyzed. But because existing polarimeters have performance limitations, Georgia Tech researchers are developing a more sensitive polarimeter that can detect smaller concentrations of optically active compounds. Thaler's work serves as a test bed for such an instrument.

"Tracey's study is significant because it marks the first time that racemization has been looked on as a sign of life on other planets," Bommarius said. "What's more, she has identified two new media in which the enzyme mandelate racemase is active."

Mandelate racemase (MR) is an enzyme that catalyzes the racemization reaction for the substrate mandelic acid. Mandelate is one of the simplest chiral molecules and has a large specific optical rotation, making it well-suited for polarization analysis, Thaler explained.

An important part of the study was to determine if MR reactivity could occur at sub-zero temperatures found on planets like Mars or moons like Titan, Europa or Enceladus, where recent data shows water is likely to exist.

After a number of unsuccessful attempts with organic cryosolvents – the most common medium to probe enzyme activity at low temperatures – Thaler achieved MR reactivity in two unconventional media. They were concentrated ammonium salt solutions and water-in-oil microemulsions (anionic surfactant Aerosol OT and non-ionic surfactant Triton X-100). Racemization occurred in temperatures as low as -30 degrees Celsius. This was promising because both the microemulsions and the concentrated salt solutions are expected to form on other planets and moons.

Another auspicious finding: Measurements for the activation parameters (thermodynamics) in the ammonium salt solutions and water-in-oil microemulsions were very similar. "This tells us that racemization is not only possible in other media, but thermodynamic parameters found in these media are similar to those found in media that's normally used," Thaler said.

The next step will be to use the MR system with the new polarimeter being developed by Trebino's group while Thaler and other members of Bommarius' team explore additional enzyme systems that might also be good test models.

Source: <http://www.gatech.edu/news-room/release.php?id=917>



April 2006

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|------------------------|---|------------------------|---|--|--|---|
| | | | | | | 1 Green Lake Star Party Paramount Park Star Party |
| 2 | 3 | 4 |  5 UW Campus Observatory public viewing night | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 Yuri's Night at the Museum of Flight |  13 | 14 | 15 Amateur Telescope Makers SIG Meeting |
| 16 | 17 | 18 | 19 SAS Meeting UW Campus Observatory public viewing night | 20 |  21 | 22 |
| 23 Texas Star Party | 24 Texas Star Party SAS Board Meeting | 25 Texas Star Party | 26 Texas Star Party |  27 Texas Star Party | 28 Texas Star Party | 29 Texas Star Party Tiger Mountain/Poo Poo Point Star Party Open House at UW Astronomy |
| 30 Texas Star Party | | | | | | |



May 2006

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|----------------------------|-----|--|-------------------------------------|--|---|
| | 1 | 2 | 3 UW Campus Observatory public viewing night | 4 UW Astronomy Colloquium | 5  | 6 New Member Orientation Meeting Green Lake Star Party Paramount Park Star Party |
| 7 Astrophot- ography/ Imaging SIG Meeting | 8 | 9 | 10 | 11 UW Astronomy Colloquium | 12 | 13  Amateur Telescope Makers SIG Meeting |
| 14 | 15 | 16 | 17 SAS Meeting UW Campus Observatory public viewing night | 18 UW Astronomy Colloquium | 19 | 20  |
| 21 | 22 SAS Board Meeting | 23 | 24 | 25 UW Astronomy Colloquium | 26 Riverside Telescope Makers Conference | 27  Riverside Tele- scope Makers Conference Tiger Moun- tain/Poo Poo Point Star Party |
| 28 Riverside Telescope Makers Conference | 29 | 30 | 31 | | | |

Planets in Strange Places



[By Trudy E. Bell]

Red star, blue star, big star, small star—planets may form around virtually any type or size of star throughout the universe, not just around mid-sized middle-aged yellow stars like the Sun. That’s the surprising implication of two recent discoveries from the 0.85-meter-diameter Spitzer Space Telescope, which is exploring the universe from orbit at infrared (heat) wavelengths blocked by the Earth’s atmosphere.

At one extreme are two blazing, blue “hypergiant” stars 180,000 light-years away in the Large Magellanic Cloud, one of the two companion galaxies to our Milky Way. The stars, called R 66 and R 126, are respectively 30 and 70 times the mass of the Sun, “about as massive as stars can get,” said Joel Kastner, professor of imaging science at the Rochester Institute of Technology in New York. R 126 is so luminous that if it were placed 10 parsecs (32.6 light-years) away—a distance at which the Sun would be one of the dimmest stars visible in the sky—the hypergiant would be as bright as the full moon, “definitely a daytime object,” Kastner remarked.

Such hot stars have fierce solar winds, so Kastner and his team are mystified why any dust in the neighborhood hasn’t long since been blown away. But there it is: an unmistakable spectral signature that both hypergiants are surrounded by mammoth disks of what might be planet-forming dust and even sand.

At the other extreme is a tiny brown dwarf star called Cha 110913-773444, relatively nearby (500 light-years) in the Milky Way. One of the smallest brown dwarfs known, it has less than 1 percent the mass of the Sun. It’s not even massive enough to kindle thermonuclear reactions for fusing hydrogen into helium. Yet this miniature “failed star,” as brown dwarfs are often called, is also surrounded by a flat disk of dust that may eventually clump into planets. (Note: This brown dwarf discovery was made by a group led by Kevin Luhman of Pennsylvania State University.)

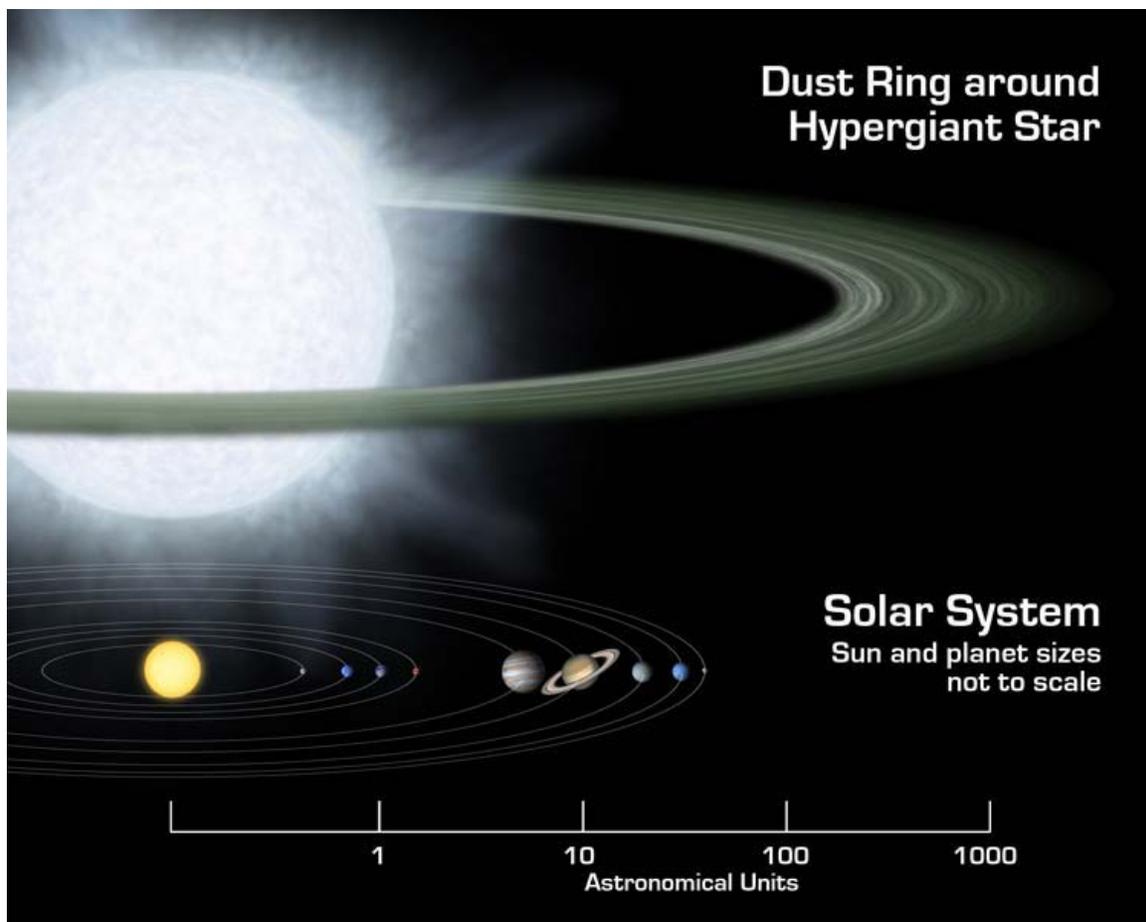
Although actual planets have not been detected (in part because of the stars’ great distances), the spectra of the hypergiants show that their dust is composed of forsterite, olivine, aromatic hydrocarbons, and other geological substances found on Earth.

These newfound disks represent “extremes of the environments in which planets might form,” Kastner said. “Not what you’d expect if you think our solar system is the rule.”

Hypergiants and dwarfs? The Milky Way could be crowded with worlds circling every kind of star imaginable—very strange, indeed.

Keep up with the latest findings from the Spitzer at www.spitzer.caltech.edu/. For kids, the Infrared Photo Album at The Space Place (spaceplace.nasa.gov/en/kids/sirtf1/sirtf_action.shtml) introduces the electromagnetic spectrum and compares the appearance of common scenes in visible versus infrared light.

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



Artist's rendering compares size of a hypothetical hypergiant star and its surrounding dusty disk to that of our solar system.

Space Bits

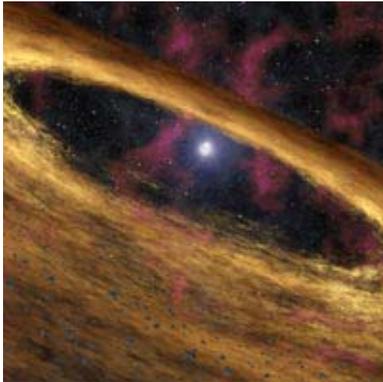


Image credit: NASA/JPL-Caltech

NASA's Spitzer Finds Hints of Planet Birth Around Dead Star

NASA's Spitzer Space Telescope has uncovered new evidence that planets might rise up out of a dead star's ashes. The infrared telescope surveyed the scene around a pulsar, the remnant of an exploded star, and found a surrounding disk made up of debris shot out during the star's death throes. The dusty rubble in this disk might ultimately stick together to form planets.

Link: <http://www.nasa.gov/vision/universe/starsgalaxies/spitzer-20060405.html>



Nearby Dust Clouds in the Milky Way

The yearly ritual of spring cleaning clears a house of dust as well as dust "bunnies," those pesky dust balls that frolic under beds and behind furniture. NASA's Hubble Space Telescope has photographed similar dense knots of dust and gas in our Milky Way Galaxy. This cosmic dust, however, is not a nuisance. It is a concentration of elements that are responsible for the formation of stars in our galaxy and throughout the universe.

Link: <http://hubblesite.org/newscenter/newsdesk/archive/releases/2006/13/image/a>

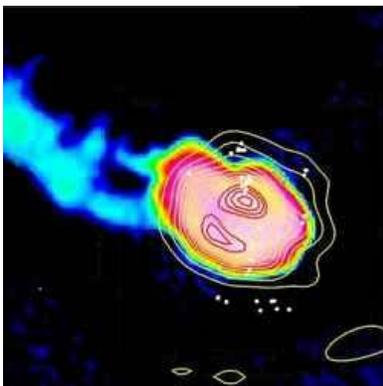


Image credit: JIVE

Deep Space Alcohol

Tue, 04 Apr 2006 - Astronomers have located a gigantic cloud of methyl alcohol surrounding a stellar nursery. The cloud measures half a trillion km across (300 billion miles), and could help astronomers understand how some of the most massive stars in the Universe are formed. It's methanol, not ethanol, so you wouldn't want to drink it if you could reach it.

Link: http://www.universetoday.com/am/publish/288_alcohol.html?442006



From Europa to the lab, a new recipe for oxygen on icy moons

Some may be surprised to learn that bleach-blondes and the enabler of life elsewhere in our solar system have something in common. And, no, it's not intelligence. It is, in fact, hydrogen peroxide.

But how that hydrogen peroxide emerges from ice to become life-sustaining oxygen has been unclear. Now, a new study at the Department of Energy's Pacific

Northwest National Laboratory in Richland, Wash., offers the most detailed picture to date on how oxygen can be made in frigid reaches far from Earth.

Link: <http://www.pnl.gov/news/release.asp?id=149>



Image credit: IAC

Galaxies Trapped in the Universe's Web

Although the galaxies we see in the night sky seem randomly strewn across the heavens, they're actually organized into large scale structures that look like cosmic filaments. These filaments and walls surround huge bubble-like voids that lack any large structures at all. European astronomers measured the orientation of thousands of galaxies, and found that many are oriented in the direction of these linear filaments.

Link: http://www.universetoday.com/am/publish/trapped_in_web.html?442006



Space Community Mourns Loss of DeLay's Budget Influence

The unexpected resignation of U.S. Rep. Tom DeLay (R-Texas), NASA's most powerful ally in Congress, sent shockwaves through the space community.

DeLay, who stepped down as House majority leader last fall after being indicted in Texas, announced April 3 that he would not seek reelection this November and would be leaving Congress some time this year.

Link: http://www.space.com/news/060405_nss_delay.html

We promise you the sun, moon and stars and we deliver...

The Seattle Astronomical Society is an organization created and sustained by people who share a common interest in the observational, educational, and social aspects of amateur astronomy. Established in 1948, the SAS is a diverse collection of over 200 individuals. A variety of programs and activities is presented by the SAS throughout the year. Monthly meetings feature speakers on a wide range of topics, from the Hubble Space Telescope to electronic imaging to personal observing experiences. The club holds public observing "star parties" at Green Lake every month, dark sky observing parties outside Seattle, plus such activities as meteor watches, public telescope and astronomy displays, National Astronomy Day, and an annual Awards Banquet.



We're on the Web!
www.seattleastro.org



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