



AU AstroNews

The Newsletter of the Astronomical Unit

October 2002

Sponsored by the Santa Barbara Museum of Natural History

Thanks Aristotle

Many thanks to Aristotle Socrates of UCSB for his talk on black holes at the September meeting. He fielded the numerous questions with aplomb. And while we're on the subject – to allow speakers to finish their presentations within the allotted time, and not fall into a black hole (with the attendant time dilation), in the future, questions from the audience will be addressed after the conclusion of the talk and before we break for refreshments.

October's Meeting

The topic for our meeting this month will be "**Choosing the Correct Telescope**," presented by Eric Kopit of Orion Telescope & Binoculars.

"What kind of telescope should I buy?" This can be a perplexing question for budding and experienced astronomers alike. **Many novice telescope buyers are turned off to the field of astronomy after they buy a poor quality "department store" telescope.** More experienced astronomy buffs still have a baffling array of choices for a serious scope. **With plenty of time for the holiday shopping season, Eric will offer some advice on how to choose the right telescope for any budget, experience, and interest level.**

Mr. Kopit studied Astronomy and Physics at UC Santa Cruz, and has worked for Orion for more than a dozen years, both as a Customer Support Supervisor and in Product Development. He has also been featured as a speaker at the popular Riverside Telescope Makers Conference. Eric will focus on different experience levels (beginner through advanced) and various types of observing, such as planetary, deep sky, and astrophotography. He will recommend the best telescope choices for each category, with an eye to various price ranges and budgets. Mr. Kopit will also spend some time on an often overlooked, but important topic: choosing proper accessories to complement your choice of telescope.

September Outreach Volunteers

September was a quiet month for outreach. Since the last newsletter, volunteers Jim Billig, Gretchen & Greg Brinser, Dora Drake, Art Harris, June Kelley, Pat McPartlin, Edgar Ocampo, Helen Osenga, Ron Pembleton, and Jim Williams showed the night sky to **260** customers at AU events.

AU Events for October

Friday, October 4, 7:30 PM – Monthly meeting in Farrand Hall at SBMNH.

Saturday, October 5, all night – Dark Sky observing. Contact Paul Winn (strg8zn@cox.net) to find out where and when.

Saturday, October 12, 6 PM – Planning Meeting in the classroom outside Dave Totzke's office at SBMNH.

Saturday, October 12, 8:30 PM – Monthly Public Star Party at SBMNH.

Friday, October 18, 7:30 PM – Monthly Public Observation at Westmont College's Van Kampen Observatory. The big mirror is back!

Remember that outreach events often change at the last minute. Contact Edgar or Chuck for the latest developments.

AU Member Detects Extrasolar Planet

AU member Bruce Gary has used his 10" Meade LX-200, coupled with an SBIG ST-8E CCD camera, to detect the transits of an extrasolar giant planet across the face of the sunlike star HD209458, an apparent magnitude 7.65 star 150 light years away in a foreleg of Pegasus. The planet is a "hot Jupiter," slightly less massive than Jupiter, in a close orbit that takes it around its star in just 3.5 days.

He used photometry to detect the 0.019 magnitude drop in the brightness of the star during the planet's 2.5 hour long transits. Read about it at: <http://reductionism.net.seanic.net/HD209458/ExoPlanet.html>

Bugs Bothering Astronomers

The recent appearance of “Killer Bees” in Goleta might inconvenience solar observers, but another new bug in our area may be of greater concern to nocturnal astronomers – mosquitoes bearing the **West Nile Virus**.

West Nile first appeared in the US, on the East Coast, in 1999. Since then, it has been marching relentlessly westward. The first confirmed local infection occurred in Los Angeles County just last month (the victim recovered). A major reservoir for the virus is the bird population, so if you start to see numerous dead birds, especially crows – for which the virus seems to be 100% fatal, it’s a good sign that West Nile Virus has reached your neighborhood. The virus may also be transmitted by blood transfusions and organ transplants.

Four out of every five people who become infected with the virus do not develop any symptoms. Most often, the virus causes fever and flu-like illness. In some cases, victims can suffer life-threatening brain swelling and meningitis. Another possible result of infection with West Nile Virus is paralysis, resulting in an inability to move the limbs, although sensation remains. It usually affects only one side of the body.

All this sounds rather dire, but remember that most infected individuals suffer no noticeable symptoms.

What can you do about it? Avoid mosquitoes during their most active periods – evening and morning twilight. Whenever you are in the potential presence of mosquitoes, wear protective clothing exposing as little skin as possible. **On exposed skin, apply an insect repellent containing DEET, which so far is the only mosquito repellent with proven effectiveness.** The higher the percentage of DEET in the repellent, the more effective it is in keeping mosquitoes away.

EPA Information on DEET

DEET, the trade name for the chemical N,N-diethyl-meta-toluamide), is the active ingredient in many insect repellent products. It is used to repel biting pests such as mosquitoes and ticks, including ticks that may carry Lyme disease. Every year, approximately one-third of the U.S. population is expected to use DEET. Products containing DEET

currently are available to the public in a variety of liquids, lotions, sprays, and impregnated materials (e.g., wrist bands). Formulations registered for direct application to human skin contain from 4 to 100% DEET. Except for a few veterinary uses, DEET is registered for use by consumers, and should not be used on food.

DEET is designed for direct application to human skin to repel insects, rather than kill them. After it was developed by the U.S. Army in 1946, DEET was registered for use by the general public in 1957. Approximately 230 products containing DEET are currently registered with EPA by about 70 different companies.

After completing a comprehensive assessment of DEET, the EPA has concluded that, as long as consumers follow label directions and take proper precautions, insect repellents containing DEET do not present a health concern. Human exposure is expected to be brief, and long-term exposure is not expected. Based on extensive toxicity testing, the EPA believes that the normal use of DEET does not present a health concern to the general population.

Yikes! I Hate DEET!

OK, if you really hate DEET, you may be able to rub the leaves of tomato plants on exposed skin to keep those pesky mosquitoes away. IBI-246, a chemical found in tomato plants, is the active ingredient in an insect repellent expected to become available next year.

North Carolina State University holds the patent on use of IBI-246 as a repellent for mosquitoes, ticks, fleas, cockroaches, and other pests. In laboratory trials, an ointment containing IBI-246 completely prevented mosquito bites on a volunteer’s arm for 12 hours, while DEET was less effective. Commercial repellents containing IBI-246 will use the trade name “SkeeterShield.”

What About Other Pests?

Vampire bats and overly-talkative fellow observers may be effectively deterred by munching on several fresh cloves of garlic immediately before and during observing sessions. This has been found to be ineffective for deterring bears and mountain lions. For these larger creatures, the best approach is to always observe with someone who can’t run as fast as you can.



Seeking the Edge of the Solar System

In September and August, respectively, 2002, the Voyager 1 and 2 spacecraft will observe their 25th anniversaries in space, continuing to perform long after their original mission to visit the Jupiter and Saturn systems. After Voyager 1's encounter with the two gas giants, it was aimed upward out of the plane of the ecliptic. Voyager 2, after its visit at Jupiter and Saturn, was given two more planetary destinations, Uranus and Neptune. It completed its "grand tour" of the outer planets in 1989. It was then aimed downward out of the ecliptic plane.

Now, at about 85 AU, Voyager 1 is the most distant human-made object. Round-trip light time is 24 hours. Voyager 2 is at about 68 AU. Their mission now is to study the heliosphere, the vast bubble of space within the Sun's influence, and the heliopause, the boundary of the solar system with interstellar space. At the heliopause, the outward pressure exerted by the solar wind balances the inward pressure of the interstellar wind. The region where solar wind particles begin piling up against the heliopause is the termination shock, where the solar wind should drop from about 1,500,000 kilometers (nearly 1,000,000 miles) per hour to 400,000 kilometers (250,000 miles) per hour. Voyager 1 is already detecting a slowing of the solar wind from the pressure of inbound interstellar particles leaking through the heliopause.

No one knows exactly how much farther Voyager 1 must travel to reach the termination shock or the heliopause. Dr. Ed Stone, Voyager Project Scientist since mission inception, estimates that the spacecraft could reach the termination shock within three years. Once there, Dr. Stone predicts it will still have about 5 billion to 8 billion kilometers (3 to 5 billion miles) and 10 to 15 years to go before actually crossing the heliopause into interstellar space. Because the heliosphere expands and contracts with the level of solar activity and the inward pressure of the interstellar wind is uncertain, it is very difficult for scientists to estimate the actual extent of the heliosphere.

This article was provided by JPL, California Institute of Technology, under a contract with NASA.

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