



the Webfooted Astronomer

News from the Seattle Astronomical Society

July 2007

Show and tell

Seattle Astronomical Society members showed off their newest toys, homemade gadgets, observing techniques, and photographs at the club's meeting June 20.

Perhaps the most amazing of the presentations was **Tom Field's** home-made magnetometer, a device used to measure variations in the Earth's magnetic field. While big-time researchers have gear that can be enormously expensive, Field made his for about \$5 with a couple of standard magnets, a bit of mylar, a few drops of glue, nylon thread, a penny, and an old CD jewel case.

Field built his gizmo, from a design by the Society of Amateur Scientists, by sticking the magnets to the thread and suspending them between the covers of the CD case. He stuck the mylar to the magnets, turning them into a mirror.

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SAS members who shared gadgets, projects, techniques, and photos at the June meeting included, from left to right, Peter Hirtle, Jim Hermanson, Jon Bearscove, Maxine Nagel, Mike Langley, Tom Field, Don Wieckowicz, and Anita Eclissi.

NEXT MEETING

July 18, 2007 — 7:30 p.m.
University of Washington
Physics/Astronomy Building,
Room A-102

SUPER MASSIVE BLACK HOLES

Dr. Eric Agol, assistant professor of astronomy at the UW, will discuss the supermassive black hole at the center of the Milky Way — and its relation to supermassive black holes in other galaxies!

Agol has modeled black hole accretion disks with the goal of explaining the spectra and variability of active galaxies. He also has developed a technique for imaging quasars on very fine scales using gravitational lensing, and has pointed out how to find isolated black holes and white dwarfs in binaries using gravitational microlensing and X-ray surveys. For more on Agol's research, visit:

<http://www.astro.washington.edu/agol>

SAS Calendar

July 12-14

Table Mountain Star Party

July 14 — New Moon

July 14 — 6 p.m.

Tiger Mountain Star Party (members only)

July 18 — 7:30 p.m.

Seattle Astronomical Society Meeting
Guest speaker: Dr. Eric Agol, UW, on super massive black holes. Details on page 1.

July 18 — 9 p.m.

UW Observatory — Public viewing night

July 21 — 7 p.m.

Seattle Astronomical Society Star Parties

- ◆ Green Lake, Seattle
- ◆ Paramount Park, Shoreline

July 22 — First quarter Moon

July 22 — 2 p.m.

Astrophotography/Imaging SIG meeting
Contact: astrophoto@seattleastro.org

August 1 — 9 p.m.

UW Observatory — Public viewing night

August 5 — 5:30 p.m.

SAS Potluck Picnic and observing party
Green Lake; see page 7 for details

August 11 — 8:30 p.m.

Tiger Mountain Star Party (members only)

August 12 — New Moon

August 12

Perseid meteor shower peaks

August 18 — 7:30 p.m.

Seattle Astronomical Society Meeting
Show and tell: favorite observing sites

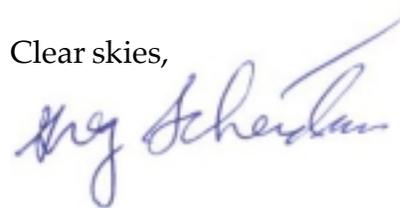
Our new look

The *Webfooted Astronomer* is under new editorship. Many thanks to Vanessa Long, who served as the editor for the last couple of years. Vanessa recently graduated from the UW, where she studied microbiology and philosophy. She has moved to Madison, where she's volunteering at the U. of Wisconsin hospital while job hunting.

I, Greg Scheiderer, am your new editor. As with all editors, I've decided to take on something that has been working perfectly well and change it all around! We're moving away from including items such as Space Place, Space Bits, and the NASA articles. Instead, there will be more about the SAS and what its members are up to.

We'd be delighted if you would like to contribute to the *Webfooted Astronomer*. Send your articles, photos, and other submissions to editor@seattleastro.org. And let us know what you think of our new approach to our club publication.

Clear skies,



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From the president's desk
By Jon Bearscove

Star Party Season

It's finally that time of the year where we all have a chance to enjoy the night sky under favorable conditions. As we gear up for star parties and sharing the sky with our friends and family, I wanted to introduce the concept of the star party for our new members and beginning amateur astronomers who may not have attended one yet. For you seasoned astronomers, if you have any special tips or tricks that help get you through the night, please feel free to contact our editor to have your ideas included in future newsletters.

So what really is a star party? Most non-astronomers think of stars in terms of movie stars, and parties in terms of getting your groove on. So us astronomers get together and party over our favorite Hollywood actors? I don't think so.

The term star party really isn't that accurate at all, because once the Sun goes down and the lights go out, everyone is quietly hunkered over their equipment enjoying the sky...quiet conversations ensue over every topic under the Sun...literally. Star parties are simply when amateur astronomers gather together at an observing site and enjoy the stars. This can be in the city like the SAS star party at Greenlake, or it can be out in the desert or in the mountains. Overnight star parties at remote locations are best because they offer the

best night sky far from light-polluted skies that wash out the stars.

To prepare for an overnight star party, you only really need to think of a star party as a camping trip where you look up at the stars instead of down at a campfire roasting marshmallows. If you don't have a motor home or a camping trailer, and are used to tent camping, you're already set to enjoy a star party in the mountains or desert.

The main difference is that you need to be prepared to be outside of the tent for most of the night rather than cuddled up in your sleeping bag nice and toasty. This means bringing warm clothes for overnight temperatures in addition to the clothes you would normally bring camping.

I like to be prepared for very cold weather at night, so I always bring my ski bibs and ski jacket. It's pitch black when you're observing, and no one cares what you look like, and I'd rather be warm. Standing or sitting at a telescope relatively motionless throughout the night means you will get colder than you normally would.

People bring everything from ski clothes to hand warmers and tent heaters. Everyone has different comfort levels, but once you've been to a few overnight star parties, you'll quickly learn that it's not that enjoyable observing through your telescope if you're too busy fighting the cold.

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SAS in the news

The *North Seattle Herald-Outlook* ran a story in its May 30 edition about SAS, our efforts at the Theodor Jacobsen Observatory at the UW, star parties, and the dark sky site. Reporter Katrina Graves quoted Mike Langley. The full story is on-line at:

http://www.zwire.com/site/index.cfm?newsid=18405560&BRD=855&PAG=461&dept_id=517907&rfi=8

KOMO radio reporter Corwin Haeck interviewed Greg Scheiderer about the dark-sky effort. A story aired June 26. You can listen on-line, but beware: it involves Art Garfunkel:

http://media.fisherinteractive.com/komo/radio/audio/070726_dark_sky_observatory.mp3

“Show and tell” continued from page 1

The penny damps local current changes that might affect the magnets. Next, he shines a laser pointer at the mirror, and the reflection hits a calibrated scale on the wall. If the reflection moves, he can measure how much.

“You actually can detect the amount of rotation that magnet is going through,” Field explained. “You’ve made a compass that’s very sensitive, and you can actually measure the rotation created by fluctuations in the magnetic field. You have a magnetometer.”

That’s where the low-tech ends. Field figured he’d have to watch this apparatus a lot and take some pretty crude measurements off the wall. So he rigged up a Webcam to watch the reflection, and wrote a software application to make and track the measurements. There was a big spike in the magnetic field while he was running it back in late May. He compared his results to those measured by the USGS, and found his amateur device nailed it.

So who cares? These fluctuations in the field are caused by magnetic storms when the Earth is blasted by charged particles from sunspots or solar emissions. The biggest can wipe out power plants, zap astronauts, and fry satellites, among other things. Getting a handle on how they happen, and when they might happen, could help us prepare and avoid damage.



A laser pointer beam is aimed at the mirror of the magnetometer. The case with four magnets at upper right nulls the Earth’s magnetic field, so the device measures outside influences.



Why didn’t I think of that?! Mike Langley and his observing light.

There’s more technical information, the plans, and the software you can download from Field’s Web site at:

<http://www.campparadox.com/magnetometer/>

You’ve been there before; you’re out observing, middle of the night, pitch dark, needing to look at the charts and scribble some observing notes. You really need three hands. So what holds your red-bulb flashlight? For **Mike Langley**, as for many of us, the flashlight wound up in his mouth. That’s no good. It’s hard to aim, and those things taste terrible. Langley finally decided to do something about it.

His solution? He got an old goose-neck desk lamp for \$3 from a thrift shop, replaced the bulb with a red LED, ditched the power cord for a nine-volt battery, wired in a potentiometer so he could vary the brightness, and – voila! – a red-light observing lamp for the field. It was inexpensive to build and it’s pretty cheap to operate, too: Langley has been running it for three or four years now on the original battery, as LEDs don’t draw much current.

“It’s a great little device,” he said. “It keeps the flashlight out of my mouth and both hands available.”

Langley said he hasn’t seen anything like his lamp on the market. He could have taken several orders at the meeting, though he’d better hurry; if a major astronomy manufacturer see this article, they’ll rush theirs to market at \$129.95.

At April's meeting SAS members heard about PanStarrs – the Panoramic Survey Telescope and Rapid Response System – being devel-



Peter Hirtle listens to a question while hefting a filter frame that is bound for PanStarrs in Hawaii.

oped by the University of Hawaii to track Earth-approaching comets and asteroids. As a follow-up, **Peter Hirtle** showed one of the frames for the filters of the PanStarrs scopes, 1.8 meter instruments each boasting a CCD camera with a billion pixels. The filters are hefty – fused silica some 10 millimeters thick. PanStarrs will image the entire sky in the space of two weeks,

seeking out stuff that might be headed our way. There's more on the Web at:

<http://panstarrs.ifa.hawaii.edu/public/home.html>

Jim Hermanson is a professor in the UW's Department of Aeronautics and Astronautics. As an astronomical observer, he has a particular interest in spotting geosynchronous satellites. Hermanson says they're pretty easy to spot because, by definition, they're just sitting there. They are dim because they're way out there, about 36,000 kilometers. So you have to know where to look.

There's some hefty math involved in figuring that out. Luckily, Hermanson has run the figures for us. Just look 7.1 degrees below the celestial equator from the latitude of Seattle. Hermanson created an overlay for his star charts that points right to that 7.1-degree line and shows him where to look.

Watch out for the Earth's shadow, especially in spring and fall. It can make the satellites impossible to see, though it's fun to try to find them just before they wink out.

SAS has plenty of great photographers, and a number of people shared their most recent pics during the meeting. **Don Wieckowicz** shared photos from his aurora-watching trip to Alaska in March. **Maxine Nagel** had some shots of a number of SAS outreach events and other favorites. **Jon Bearscove** had pix from a June 2 Boy Scout camporee at which he and Langley represented SAS with an astronomy display. **Anita Eclissi** has spent much time of late chasing after the little green men spotted at the SAS banquet in January. It turns out they have some diverse interests.



Bearscove's bino mount. What's so odd about a guy asking for three crutches?

Finally, Bearscove shared his binocular mount made from a mish-mash of spare parts and odd collectibles. Strangest of all are the legs of the mount, which are made from old wooden crutches. There's nothing so unusual about crutches in and of themselves. Bearscove admits, however, that he did get some strange looks when he went into a thrift shop... and asked for three of them. Despite the elegance of the bino mount, Bearscove is discouraged that it neither wins a gadget award at various star parties, nor gets snapped up at any of his garage sales. ★



"Star party season" continued from page 3

On warm summer nights, sometimes this isn't an issue, but when you are in the mountains or deserts, it's always better to be prepared.

When I attended my first star party, I only had a star chart and a pair of binoculars, and had the best night ever. You don't need expensive equipment to head out to a dark sky site and enjoy the Milky Way. Again, it's a hybrid camping trip, so-to-say. Only have a tent, sleeping bags, and some binos? You're ready for a star party!

Binoculars are wonderful optical aids at a dark sky site because you will see more stars than you ever have before. There are wonderful books that focus on binocular observing, and one can spend years getting to know the night sky with a decent pair. In fact, many seasoned astronomers recommend that beginning astronomers buy a good set of binos rather than an inexpensive telescope and learn the night sky first.

I've been to the Table Mountain Star Party and even the Mt. Kobau Star Party in Canada with just camping equipment and a pair of binos, so don't be discouraged if you don't have a tele-

scope yet. There will be plenty of telescopes at the organized star parties that you can look through to see faint fuzzies.

To keep star parties fun there are a few "unspoken" rules. White light is public enemy number one. No white light is allowed — in any form, at any time.

To preserve your night vision, you must use red light to observe your charts, find equipment in your bags, or to walk to the bathroom. The other astronomers want to preserve their night vision, too, so it's a huge courtesy to only use red light. If there are astrophotographers, white light could ruin their images.

If you don't have a red flashlight, the best thing to do is simply buy a red LED flashlight that you can use year after year. If you need one Johnny-on-the-spot, you can stop by a craft store like Michael's and pick up a roll of red cellophane and cut circles out of it, and use rubber bands to cover the lens on your regular flashlight. This works very well, and is a cheap method.

If your car has daytime running lights that will not turn off, and you plan to arrive at a star party after dark, there are a few ways to deal with this. On my car, I can actually pull the emergency brake lever up ONE click, and the running lights turn off. This isn't enough to engage the brake, but enough to turn the running lights off. I do this if I'm arriving late, and am about to approach astronomers and their equipment. I don't want to blind them and make enemies the minute I arrive!



SAS Gallery



***It turns out it really is rocket science!** Dr. Dieter Zube (fifth from the right in the top photo), Project Engineering Manager at Aerojet, was guest speaker at SAS's March meeting. His presentation, "Rocket Engines in Redmond," was so popular that two groups from SAS wound up doing tours of the Aerojet plant in April. Aerojet designs, builds and tests thrusters for spacecraft. Multitudinous thanks to Jaime Shih, of Aerojet human resources, for organizing the tours, and to Dr. Zube and Dave Hartsell, Test Operations Manager, for being our guides.*

If all else fails, tape paper plates to your running lights. If you have a switch, just switch them off. Also, consider the interior lights on your car. If you need to get something out of your car at night, you need to either cover your dome and door lights, or remove the bulbs if you can't switch them off. This includes your trunk light. In the middle of the night, it can be blinding, and make people upset at a sudden flash of white light. When you arrive in the afternoon at a star party and are waiting for the Sun to go down, it's a great time to prepare your car for the night by taking care of the interior lights and trunk light.

A few other basic rules at any star party: No campfires at all at anytime. Campfires cause ash, which is bad for optics, and in most places fires are prohibited anyway. Drive slowly to keep the dust down for people who already have their equipment set up. If you have small children, please teach them not to run around the equipment or shuffle their feet in the dirt because this causes dust that can harm optics.

You know, the more you think about it, the less this is like a party! But star parties are great fun because we all have the same common interest in the night sky. If you've never been to one, I highly encourage you to join in the fun and mingle with fellow amateur astronomers and get to know the night sky. ★

Potluck picnic August 5

The second annual SAS potluck picnic will take place Sunday, August 5, beginning at 5:30 p.m. at Green Lake Park. We will gather at our "star party" site — on the northwest shore of the lake, at a grassy area southwest of the Bathhouse Theater, near the fishing piers on the lake.

What to bring

Please bring folding tables and chairs (if you have them), your own plates, cups, cutlery, something to drink for yourself, and either an entree, side-dish, or dessert to share.

Please bring a telescope as well — for a bit of "celestial observing" after the picnic!

Future file: upcoming meeting topics

WEDNESDAY, AUGUST 15, 7:30 PM

SHOW & TELL...

FAVORITE OBSERVING SITES AND MORE!

SAS members and friends will share about their favorite observing locations. Just a month after the Table Mountain Star Party, there will be fun photos and stories from the event. We will also see photos and hear about other favorite "stargazing spots", observatories, and planetariums in the Northwest. This will be the main focus of the Show & Tell, but following this portion of the program, people that were unable to share their homemade gadgets and/or other astro-projects at the June meeting will have an opportunity to do so.

If you would like to share at this meeting please email me to sign up for a time slot...

Anita Eclissi, VP Programs

programs@seattleastro.org

WEDNESDAY, SEPTEMBER 19, 7:30 PM

DR. RON HOBBS - BARNSTORMING THE PLANETS

Dr. Ron Hobbs, Public Programs Assistant at the Museum of Flight and Solar System Ambassador for NASA's Jet Propulsion Laboratory, will be our guide as we travel through the wonders of the solar system via the latest pictures and scientific data from NASA's New Horizons probe, Cassini, the Mars Orbiters, the Rovers — and more.

We don't need spacesuits to visit Jupiter, Saturn, and Mars... Dr. Hobbs will take us there with his vivid, enthusiastic presentation!

http://www2.jpl.nasa.gov/ambassador/profiles/Ron_Hobbs.htm

"Little Green Men Carovting With Deer" by Anita Eclissi. Anita has been tracking these guys and their diverse interests since they were "visitors" at the SAS banquet in January. Anita documented their, and her, travels with a slide show at the June meeting.



The Webfooted Astronomer

Seattle Astronomical Society

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RETURN SERVICE REQUESTED

NEXT MEETING JULY 18

UW's Dr. Eric Agol
discusses super
massive black holes!

Details, page 1