



the Webfooted Astronomer

News from the Seattle Astronomical Society

October 2008

Elections coming up in November

Several positions, including SAS president, lack candidates

Members of the Seattle Astronomical Society will elect a new slate of officers for the coming year at the club's annual meeting in November.

The current SAS board, acting as the nominating committee, has been unable to identify a willing candidate for president of the society. The committee has two new candidates, three returning officers, and two vacant slots in its slate. Here are the confirmed candidates as of the deadline date for this issue of *The Webfooted Astronomer*:

President: vacant

Vice-president, activities: **Jerry Kuch**

Vice-president, education: **Mohammad Sarwat**

Vice-president, membership: **Rod Ash**

Vice-president, publicity: vacant

Treasurer: **Maxine Nagel**

Secretary: **Connie Griffith**

Ash, Nagel, and Griffith currently hold those positions and are offering to serve second terms. President Jon Bearscove has served two years in that position and does not wish to serve a third. VP/Publicity Greg Scheiderer has served three years, and is willing to serve a fourth if no other candidate steps forward. Note that the SAS By-Laws limit officers to no more than two consecutive terms, but also allow exceptions to be recommended by the nominating committee. **Volunteers appreciated!**

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NEXT MEETING

October 15 – 7:30 p.m.
University of Washington
Physics/Astronomy Building,
Room A-102

Fermi's Paradox

Wikipedia called Fermi's Paradox an apparent contradiction between high estimates of the probability of the existence of extraterrestrial civilizations and the lack of evidence for, or contact with, such civilizations. This paradox is named after Enrico Fermi from the Los Alamos National Laboratory back in the 1950s.

SAS member Paul Rodman will speak about Fermi's Paradox at our October meeting. Of course, aliens from other civilizations are welcome to attend, but are asked not to reveal their presence until after the talk...and please leave your phasers at the door.

SAS Calendar

October 4— 7 p.m.

Seattle Astronomical Society Star Parties

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

October 6— First quarter Moon

October 11— 6:30 p.m.

Amateur telescope makers SIG meeting

Contact: atm@seattleastro.org

October 15— 7:30 p.m.

Seattle Astronomical Society Meeting

Details on page 1.

October 15— 7 p.m.

UW Observatory — Public viewing night

October 17 — 3 a.m.

The Moon occults the Pleiades

October 21 — early a.m.

Orionid meteor shower peaks

October 25— 6 p.m.

Tiger Mountain Star Party (members only)

October 28 — New Moon

November 5 — 7 p.m.

UW Observatory — Public viewing night

November 5 — First quarter Moon

November 8 — 7 p.m.

Seattle Astronomical Society Star Parties

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

SAS elections in November

Continued from page 1

More By-Law fun

SAS By-Laws require that the slate of officers be published at least a month before the election, and this newsletter fulfills that requirement. The By-Laws also allow for nominations to be taken from the general membership, both at the October meeting, and before the vote is taken in November.

Further, the By-Laws state that the nominating committee “shall” provide a list of at least one candidate for each office. The committee has proven unable to do so, though the By-Laws do not specify a penalty for that. The board can fill any vacant office at any time, provided it can find a candidate.

The board, by the way, includes the seven elected officers, plus the immediate past president and up to three voting trustees appointed by the president.

The complete constitution and by-laws of the Seattle Astronomical Society may be found on the SAS Web site at

<http://www.seattleastro.org/SASbylaws.pdf>



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Alice's Astro Info an informative local blog

Folks looking for a potpourri of information on astronomy should check out local blogger Alice Enevoldsen's effort, "Alice's Astro Info."

Enevoldsen staffs the planetarium at the Pacific Science Center, but the blog is her own personal effort to answer common questions and highlight interesting goings on in the world of astronomy. Enevoldsen knows her stuff; she earned a bachelor's degree in astronomy/geology at Whitman College and a master's in teaching from Seattle University.

Recent posts have touched on how to choose a telescope, dwarf planets, and dark matter.

Check out Alice's Astro Info at <http://alicesastroinfo.wordpress.com/>

We promise you the Sun, the Moon, and the 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 and Paramount Park 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.

SAS officers

President, Jon Bearscove
president@seattleastro.org

Board chair, Thomas Vaughan
chair@seattleastro.org; 206-772-1282

VP Programs, vacant
programs@seattleastro.org

VP Education, Mike Langley
education@seattleastro.org

VP Membership, Rod Ash
membership@seattleastro.org

VP Publicity, Greg Scheiderer
publicity@seattleastro.org; 206-714-0448

Secretary, Connie Griffith
secretary@seattleastro.org

Treasurer, Maxine Nagel
treasurer@seattleastro.org



Extreme starburst



by Dr. Tony Phillips

A star is born. A star is born. A star is born. Repeat that phrase 4000 times and you start to get an idea what life is like in distant galaxy J100054+023436.

Astronomers using NASA's Spitzer Space Telescope and ground-based observatories have found that the galaxy gives birth to as many as 4000 stars a year. For comparison, in the same period of time the Milky Way produces only about 10. This makes J100054+023436 an extreme starburst galaxy.

"We call it the 'Baby Boom galaxy,'" says Peter Capak of NASA's Spitzer Science Center at the California Institute of Technology in Pasadena, CA. "It is undergoing a major baby boom, producing most of its stars all at once. If our human population was produced in a similar boom, then almost all people alive today would be the same age."

Capak is lead author of a paper entitled "Spectroscopic Confirmation of an Extreme Starburst at Redshift 4.547" detailing the discovery in the July 10th issue of *Astrophysical Journal Letters*.

The galaxy appears to be a merger, a "train wreck" of two or more galaxies crashing together. The crash is what produces the baby boom. Clouds of interstellar gas within the two galaxies press against one another and collapse to form stars, dozens to hundreds at a time.

This isn't the first time astronomers have witnessed a galaxy producing so many stars. "There are some other extreme starburst

galaxies in the local universe," says Capak. But the Baby Boom galaxy is special because it is not local. It lies about 12.3 billion light years from Earth, which means we are seeing it as it was 12.3 billion years ago. The universe itself is no older than 14 billion years, so this galaxy is just a youngster (Capak likens it to a 6-year-old human) previously thought to be incapable of such rapid-fire star production.

The Baby Boom galaxy poses a challenge to the Hierarchical Model of galaxy evolution favored by many astronomers. According to the Hierarchical Model, galaxies grow by merging; Add two small galaxies together, and you get a bigger galaxy. In the early years of the universe, all galaxies were small, and they produced correspondingly small bursts of star formation when they merged. "Yet in J100054+023436, we see an extreme starburst. The merging galaxies must be pretty large."

Capak and colleagues are busy looking for more Baby Boomers "to see if this is a one-off case or a common occurrence." The theory of evolution of galaxies hangs in the balance.

Meanwhile... A star is born. A star is born. A star is born.

See more breathtaking Spitzer images at www.spitzer.caltech.edu/Media/mediaimages. Kids can play the new Spitzer "Sign Here!" game at spaceplace.nasa.gov/en/kids/spitzer/signs.

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



The “Baby Boom” galaxy loosely resembles the galaxy shown here, called Zw II 96, in this Hubble Space Telescope image. This galaxy is only 500 million light-years away, while the Baby Boom galaxy is 12.3 billion light-years away.

Getting to Know the New Members of the trans-Neptunian Solar System

by Ron Hobbs

If you look deep enough into Cetus, about five degrees northeast of *Theta Ceti*, you can see all the way to the edge of the Solar System. OK, you will need either the “spaceship of your imagination” or a big telescope, though at magnitude 18.6, it is accessible to the largest amateur scopes.¹ (136199) Eris is currently the undisputed champion of trans-Neptunian space and, at 96.7 AU, the most distant object orbiting the Sun that can be seen from Earth. When Mike Brown and his team announced the discovery of this object, then known provisionally as 2003 UB₃₁₃, they called it the “10th planet.” The discovery of Eris stimulated the IAU to consider just how to define a planet. They ended classifying it and similar

objects as dwarf planets, and more recently as a “plutoids.” However, to my mind, this latter taxon is redundant and perpetuates the emotional attachment to the second largest trans-Neptunian object (TNO) that is clouding a clear understanding of what Alan Stern calls the “third zone” of the Solar System. Eris really deserves to be the representative of the trans-Neptunian realm, at least until something larger is discovered.

Brown, with his inimical humor, suggested the name Eris, the Greek goddess of strife and discord, as the name of this new world. It is said that she is constant companion of Ares, the god of war, and “follows him everywhere.”² There is a persistent rumor that he wanted to name it “Xena,” after the “mythi-

	Number	Name	MPC Designation	Dynamical Class	H	Diameter (km)	Known Moons	a (AU)	e	Period (Years)	Inclination
		Triton	Neptune I	Satellite	-1.2	2706	na			5.877 d	
1	(136199)	Eris	2003 UB ₃₁₃	Scattered	-1.24	2400	1	67.84	0.437	558.77	44.1°
2	(134340)	Pluto		Plutino	-0.7	2340	3	39.44	0.250	247.74	17.1°
3	(136472)	Makemake	2005 FY ₉	Classical	-0.48	1500		45.42	0.161	306.17	29.0°
4	(136108)	Haumea	2003 EL ₆₁	Classical	0.18	2000x1200x1000	2	43.13	0.195	283.28	28.2°
5		Charon	Pluto I	Satellite	0.9	1212	na			6.39 d	
6	(90377)	Sedna	2003 VB ₁₂	Extended	1.56	1700		494.02	0.845	10,960.61	11.9°
7	(90482)	Orcus	2004 DW	Plutino	2.3	910	1	39.18	0.226	245.33	20.6°
8	(50000)	Quaoar	2003 LM ₆₀	Classical	2.67	1260	1	43.58	0.039	287.66	8.0°
9	(55636)		2002 TX ₃₀₀	Haumea family	3.09	810		43.34	0.126	265.37	25.8°
10	(28978)	Ixion	2001 KX ₇₆	Plutino	3.2	570		39.69	0.244	250.01	19.6°
11	(55565)		2002 AV ₆₇	Classical	3.27	800		47.07	0.13	322.97	24.4°
	(1)	Ceres		Asteroid	3.34	952		2.77	0.079	4.60	10.6°
12			2007 UK ₁₂₆	Scattered	3.5			73.14	0.486	625.52	23.4°
13	(174567)		2003 MN ₁₂	Classical	3.6	838		45.98	0.142	311.88	21.5°
14	(55637)		2002 UX ₂₅	Classical	3.6	649	1	42.69	0.140	278.93	19.4°
15	(20000)	Varuna	2000 VR ₁₀₆	Classical	3.7	874		42.80	0.055	280.03	17.2°

Fifteen of the Largest Trans-Neptunian Objects: Table of the 15 brightest TNOs, with a moon and an asteroid for comparison. Diameters, except those for Pluto, Charon, Triton and Ceres are approximate. Absolute magnitude (H) and orbital data are taken from <http://neo.jpl.nasa.gov/orbits/> as of September 24, 2008.

cal" TV Amazon; the rumor is even repeated in a recent history of astronomy.³ Brown is adamant that he never intended such a thing; "Xena" was merely a nickname (much easier to say than 2003 UB₃₁₃) that was saved for the first object discovered that was larger than (134340) Pluto. It is sign of his erudition and his humor that he chose the name Dysnomia for the moon of Eris. Dysnomia was a daughter of Eris, the daemon of lawlessness. (For those who are not into campy TV melodramas, Lucy Lawless was the actress who played Xena.)

Eris will be at opposition, and closest to the Earth at a mere 95.778 AU, on October 14, and will certainly be observed by several of the largest telescopes. I was able to participate in a teleconference with Brown, and I asked him about the status of TNO observations. He said that a number of findings have been made recently and that the only limitation is that the astronomers can't write fast enough. Expect some exciting new findings in the near future. The understanding of Eris can only get better over time. This distant dwarf planet passed aphelion around 1977 and is falling back toward perihelion at just less than an AU per year. I wonder when an enterprising astrophotographer of SAS will be able to capture an image of (136199) Eris.

Coincidentally, the second TNO discovered (after Pluto), (15760) 1992 QB₁, is in the same part of sky, just farther north in Pisces. Its discovery by David Jewitt and his colleagues unleashed a torrent of discoveries which, at last count, numbered 1,323 objects⁴ and which have now given us a pretty good sense of the size and shape of the Solar System just beyond Neptune. It is often called the "Kuiper Belt," but it is more like a torus of space, with inclinations approaching 45 degrees and higher.

The only agreement that could be reached in the "Great Planet Debate" is that no one likes the definition of planets that the IAU promulgated in 2006. However, The IAU has, at long last, decided on official names for the very largest TNOs. The third largest TNO, provisionally designated 2005 FY₉, and nicknamed "Easterbunny," is now formally (136472) Makemake. It is the name of the creator of humanity, the prime deity of the birdman cult of the people of Rapa Nui, or Easter Island, as it is known to English speakers. The most bizarre of the "plutoids," 2003 EL₆₁ is now known as (136108) Haumea. Haumea rotates on its axis in less than 4 hours, and is shaped like a flattened football. It has two satellites which are named for daughters of Haumea; the outer and larger of its two satellites is now called Hi'iaka and the inner moon is Namaka. Haumea, its satellites and at least five other TNOs are members of a collisional family, the first noticed in the outer solar system. Now that the largest TNOs have names, we can get down to the work of fully appreciating the fascinating structure and the unique worlds of this immense region of the outer Solar System. ★

The Solar System Ambassadors Program is a public outreach program designed to work with motivated volunteers across the nation. These volunteers communicate the excitement of JPL's space exploration missions and information about recent discoveries to people in their local communities. Ron Hobbs, a member of SAS, has been an Ambassador since 2001.

¹ See <http://www.moonglow.net/ccd/pictures/pc/index.html#tnos>

² "Eris." *Encyclopedia Mythica* from Encyclopedia Mythica Online. by Ryan Tuccinardi <http://www.pantheon.org/articles/e/eris.html>

³ Couper, H, Henbest, N. *The History of Astronomy*. Firefly Books; 2007

⁴ Distant EKOs: The Kuiper Belt Electronic Newsletter. <http://www.boulder.swri.edu/ekonews/>

NEXT MEETING
October 15
 Paul Rodman on
 "Fermi's Paradox"
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