

IO - January 2008

Issue 2009-01
Eugene Astronomical Society



Eugene Astronomical Society
Annual Club Dues \$25
President: Sam Pitts - 688-7330
Secretary: Jerry Oltion - 343-4758
Additional Board members:
Jacob Strandlien, Tony Dandurand,
Tommy Lightning Bolt.

www.eugeneastro.org

EAS is a proud member of:

The Astronomical League
The World's Largest Federation of Amateur Astronomers

NEXT MEETING: JANUARY 22ND

Swap Meet & Potluck Get-Together

Our December meeting was cancelled due to bad weather, so we're going to try it again on January 22nd. This will be an informal opportunity to visit and share a potluck dinner with fellow amateur astronomers, plus swap extra gear for new and exciting equipment from somebody else's stash. Bring some food to share, and any astronomy gear you'd like to sell, trade, or give away.

We'll also have a raffle for several brand-new eyepieces and filters. Ticket will go on sale from 6:30 pm till 7:30 pm, and the drawing will begin at 7:35 pm. Tickets will cost \$3 for one or \$5 for two. Only one trip to the prize table per person. If any prizes remain after everyone has received a chance, then we'll have a 2nd chance drawing. Your name must be on your ticket and you must be present to win!

We also encourage people to bring any new gear or projects they would like to show the rest of the club.

First Quarter Friday January 2nd

The weather has been pretty gray for stargazing lately, but if the sky clears on January 2nd, bring your scope to the College Hill Reservoir (24th and Lawrence in Eugene) and share the view with whoever shows up. We've had a good turnout at every one of these First Quarter Fridays that hasn't been clouded out, and the word is spreading that this is a don't-miss event.

Here are the dates through December of 2009. Note that we have two parties in January and May, but none in February.

January 2, 2009
January 30, 2009
March 6, 2009
April 3, 2009
May 1, 2009

May 29, 2009
June 26, 2009
July 31, 2009
August 28, 2009
September 25, 2009

October 23, 2009
November 27, 2009
December 25, 2009

REMEMBER THAT WE NOW MEET AT EWEB

500 E. 4th Avenue in Eugene.

OUR NEXT MEETING WILL BE ON THURSDAY, JANUARY 22ND AT 7:00 IN THE NORTH BUILDING'S COMMUNITY ROOM. This is in the semicircular building to the north of the fountain at EWEB's main campus on the east end of 4th Avenue.

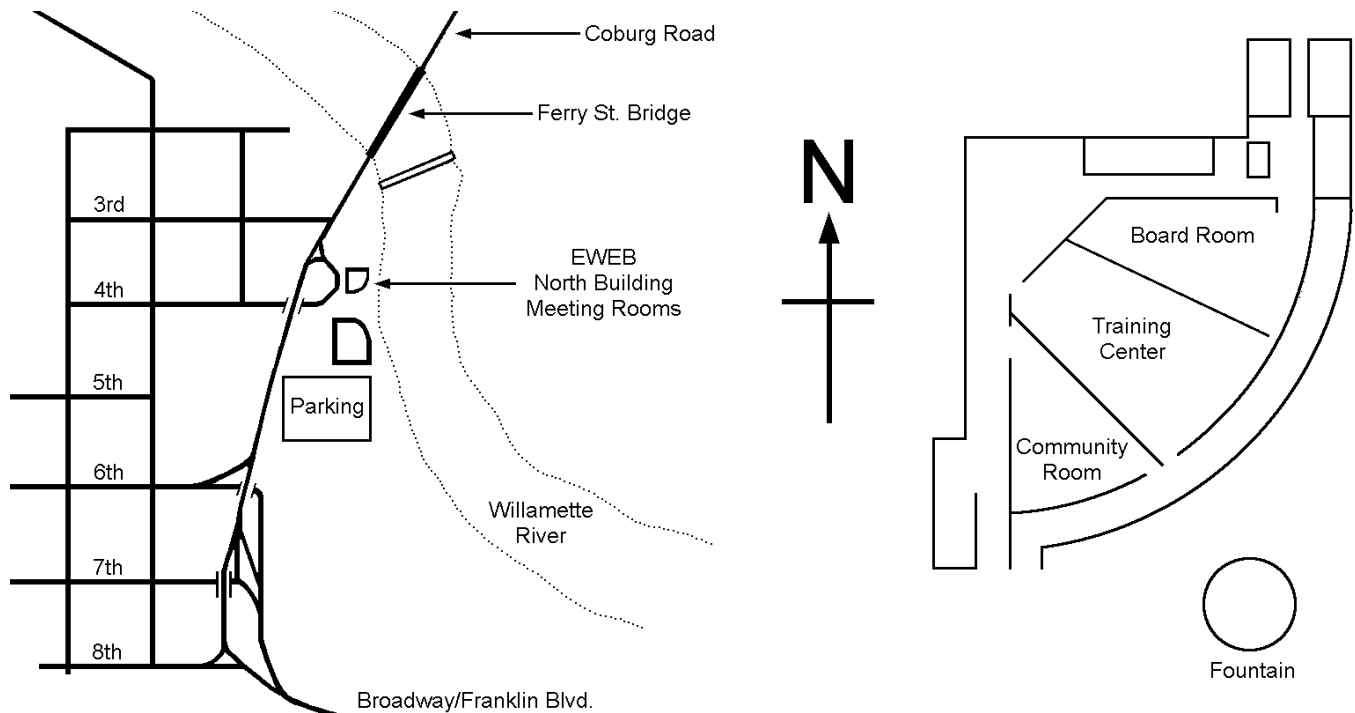
Meeting dates for 2009: (All meetings are at 7:00 in the Community Room)

January 22
February 26
March 26

April 23
May 28
June 25

July 23
August 27
September 24

October 22
November 19
December 17



EWEB is located at 500 E. 4th Avenue.

EAS meets in the first room in the semicircular building to the north of the fountain.

CASTLE STORAGE

Unit _____
Code _____

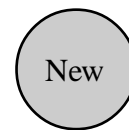
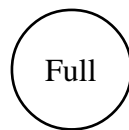
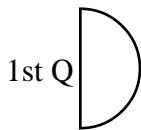
120 S. Danebo • Eugene, OR 97402 • 541.607.3800

Thank You Castle Storage

Board member Tommy Lightning Bolt was instrumental in getting a storage unit from the owners of Castle Storage for EAS to store its telescopes and equipment. EAS would like to thank Castle Storage for their generosity and support for our group. Please give them a call if you need a storage space, and tell your friends. They are great people and offer secure and quality units.



Observing in January



January 4	January 10	January 17	January 25
Mercury Set: 6:21 PM	Mercury Set: 6:21 PM	Mercury Set: 5:40 PM	Mercury Rise: 6:45 AM
Venus Set: 8:48 PM	Venus Set: 8:57 PM	Venus Set: 9:08 PM	Venus Set: 9:18 PM
Mars behind Sun	Mars behind Sun	Mars behind Sun	Mars behind Sun
Jupiter Set: 6:00 PM	Jupiter Set: 5:44 PM	Jupiter Set: 5:25 PM	Jupiter behind Sun
Saturn Rise: 10:22 PM	Saturn Rise: 9:58 PM	Saturn Rise: 9:30 PM	Saturn Rise: 8:56 PM
Uranus Set: 10:19 PM	Uranus Set: 9:56 PM	Uranus Set: 9:30 PM	Uranus Set: 9:00 PM
Neptune Set: 7:59 PM	Neptune Set: 7:37 PM	Neptune Set: 7:10 PM	Neptune Set: 6:40 PM
Pluto Rise: 6:30 AM	Pluto Rise 6:07 AM	Pluto Rise: 5:40 AM	Pluto Rise: 5:10 AM

All times: Pacific Standard Time (Nov 2, 2008-March 8, 2009) = UT -8 hours or U.S. Pacific Daylight Time (March 8-November 1, 2009) = UT -7 hours.

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
1/1/2009	10:28	22:14	07:47	16:45	06:03	18:30
1/2/2009	10:48	23:20	07:47	16:46	06:03	18:30
1/3/2009	11:07		07:47	16:47	06:03	18:31
1/4/2009	11:29	00:29	07:47	16:48	06:03	18:32
1/5/2009	11:55	01:42	07:47	16:49	06:03	18:33
1/6/2009	12:27	02:58	07:47	16:50	06:03	18:34
1/7/2009	13:09	04:17	07:47	16:51	06:03	18:35
1/8/2009	14:04	05:34	07:47	16:52	06:03	18:36
1/9/2009	15:14	06:42	07:46	16:53	06:03	18:37
1/10/2009	16:34	07:37	07:46	16:55	06:03	18:38
1/11/2009	17:58	08:20	07:46	16:56	06:03	18:39
1/12/2009	19:20	08:54	07:45	16:57	06:02	18:40
1/13/2009	20:38	09:21	07:45	16:58	06:02	18:41
1/14/2009	21:52	09:44	07:44	16:59	06:02	18:42
1/15/2009	23:03	10:05	07:44	17:00	06:02	18:43
1/16/2009		10:26	07:43	17:02	06:01	18:44
1/17/2009	00:12	10:48	07:43	17:03	06:01	18:45
1/18/2009	01:20	11:12	07:42	17:04	06:00	18:46
1/19/2009	02:26	11:40	07:41	17:06	06:00	18:47
1/20/2009	03:31	12:14	07:41	17:07	05:59	18:48
1/21/2009	04:32	12:56	07:40	17:08	05:59	18:49
1/22/2009	05:26	13:45	07:39	17:09	05:58	18:51
1/23/2009	06:13	14:42	07:38	17:11	05:58	18:52
1/24/2009	06:52	15:44	07:38	17:12	05:57	18:53
1/25/2009	07:25	16:49	07:37	17:14	05:56	18:54
1/26/2009	07:51	17:55	07:36	17:15	05:56	18:55
1/27/2009	08:14	19:00	07:35	17:16	05:55	18:56
1/28/2009	08:35	20:06	07:34	17:18	05:54	18:57
1/29/2009	08:54	21:13	07:33	17:19	05:53	18:59
1/30/2009	09:13	22:20	07:32	17:20	05:52	19:00
1/31/2009	09:34	23:30	07:31	17:22	05:51	19:01

All times are for Eugene, Oregon, Latitude 44° 3' Longitude 123° 06' for listed date

Other Items of Interest This Month

- All month: Venus steadily rising in evening sky
 Mercury visible in evening sky during first two weeks of the month
1/2 First Quarter Friday star party
 Early 1/3: Quadrantid meteors in early morning
 1/4 Earth at perihelion (closest to the Sun)
 1/14 Moon near Saturn
 1/22 Venus within 1.5° of Uranus
 1/29 Moon near Venus
1/30 First Quarter Friday star party
 1/31 Saturn's moons cluster on one side

For Current Occultation Information

Visit **Derek C. Breit's** web site
"BREIT IDEAS Observatory"

<http://www.poyntsource.com/New/Regions/EAS.htm>

Go to Regional Events and click on the Eugene, Oregon section. This will take you to a current list of Lunar & asteroid events for the Eugene area. Breit continues to update and add to his site weekly if not daily. This is a site to place in your favorites list and visit often.

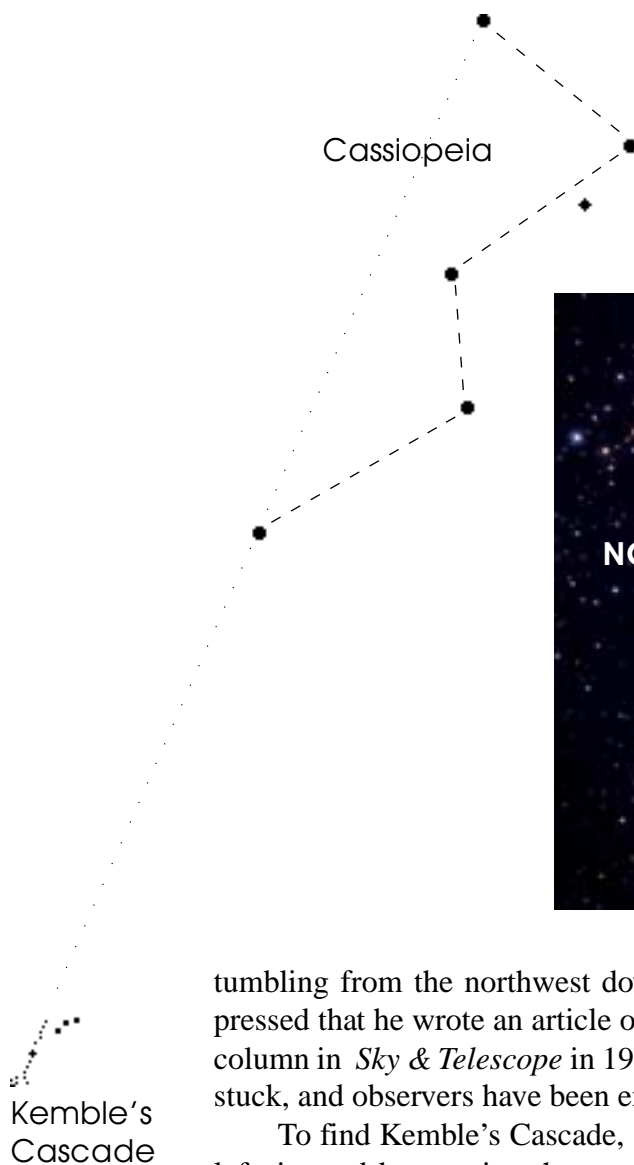
Observing Highlight: Kemble's Cascade

Camelopardalis is a constellation nearly as difficult to find as it is to pronounce. Tucked between Cassiopeia and Ursa Major, it's a relative newcomer made up of leftovers that didn't fit into the surrounding constellations. Fortunately, it has one beautiful highlight to call its own: Kemble's Cascade.

Kemble's Cascade is an asterism, a pattern created by unrelated stars. It is a relatively straight line of more than 20 colorful 5th to 9th magnitude stars that span 2.5 degrees, a distance of approximately five moon diameters. The stars seem to cascade from the northeast down to the southwest. Given its size, it's more of a binocular target than a telescope target, but there's a treat for telescope observers in the bottom of

the cascade: the spray of stars at the bottom that makes up the open cluster NGC 1502.

Kemble's Cascade was named by Walter Scott Houston in honor of Father Lucian J. Kemble (1922 - 1999), a Franciscan friar and amateur astronomer who wrote a letter to Walter about the asterism, describing it as "a beautiful cascade of faint stars



Kemble's Cascade

tumbling from the northwest down to the open cluster NGC 1502." Walter was so impressed that he wrote an article on the asterism that appeared in his "Deep Sky Wonders" column in *Sky & Telescope* in 1980, in which he named it "Kemble's Cascade." The name stuck, and observers have been enjoying it ever since.

To find Kemble's Cascade, sight from the right tip of Cassiopeia's "W" through the left tip, and keep going the same distance again. Goto-ers can aim for NGC 1502 and follow the star trail upward, or key in R.A. 4° 00 and Dec. +62.5 and you'll be near the center of the cascade. Use the lowest-power, widest-field eyepiece you have. Under a dark sky, don't be surprised if you spot it by naked eye. And what's that smudge of light about 12 degrees away to the east? That would be the Double Cluster in Perseus. Go have a look as long as you're nearby.

Eclipse Season for Saturn's and Jupiter's Moons

Twice a year, when the Earth and the Moon are lined up in the same plane as the Earth's orbit around the Sun, we get "eclipse season." Other planets have eclipse seasons, too, and both Jupiter and Saturn are entering theirs in 2009. Jupiter is such a huge planet and its axial tilt is so small (3°) that we see its moons cast shadows on Jupiter or be eclipsed by it nearly every month, but it's much rarer for one moon to cast its shadow on another moon. That's what will be happening in 2009. Many of these events could be too subtle to detect visually, but it might be fun to try.

Saturn, with its 27° tilt, seldom has even shadow transits, much less moon-to-moon eclipses, but this year gives us several of both phenomena. Shadow transits will be too common to list here, but the following charts will tell you when to look for moon-moon eclipses. Use *SkyandTelescope.com*'s moon-position applets to show you where to look in relation to the planets for the moons you're interested in. (For Saturn, go to: http://SkyandTelescope.com/observing/objects/planets/javascript/saturn_moons.html. For Jupiter, go to: <http://SkyandTelescope.com/observing/objects/planets/javascript/jupiter.html>.) The tables below are from a French website that's seeking observers who want to record these events photometrically. There are also many moon-moon occultation events not listed here. If you're interested, visit <http://www.imcce.fr/phemu09> for details.

Jupiter's Moon Eclipses for 2009

1=Io, 2=Europa, 3=Ganymede,
4=Callisto

P=Partial, A=Annular, T=Total

YR	MT	DAY	H	M	S	Event
2009	6	10	7	30	51.	3 ECL 4 A
2009	6	11	6	14	23.	1 ECL 4
2009	6	16	8	48	4.	3 ECL 1 P
2009	6	19	8	34	18.	4 ECL 1
2009	6	20	9	39	7.	4 ECL 1 P
2009	7	1	5	36	30.	3 ECL 1 P
2009	7	4	6	26	12.	1 ECL 3 A
2009	7	6	6	18	47.	1 ECL 2 P
2009	7	8	8	32	12.	3 ECL 1 P
2009	7	11	9	11	43.	1 ECL 3 A
2009	7	13	8	40	18.	1 ECL 2 P
2009	7	14	10	47	32.	3 ECL 2
2009	7	20	11	3	48.	1 ECL 2 P
2009	7	31	2	44	31.	1 ECL 2 P
2009	8	7	5	16	30.	1 ECL 2 P
2009	8	12	1	54	2.	3 ECL 2 P
2009	8	14	7	54	51.	1 ECL 2 P
2009	8	19	6	13	48.	3 ECL 2 P
2009	8	23	3	23	30.	1 ECL 3 P
2009	8	24	1	29	38.	1 ECL 3 P

Jupiter (cont.)

YR	MT	DAY	H	M	S	Event
2009	8	29	7	42	53.	1 ECL 2 P
2009	8	30	7	57	59.	1 ECL 3 P
2009	9	1	4	10	39.	1 ECL 2 P
2009	9	16	2	16	43.	1 ECL 2 P
2009	9	23	4	45	23.	1 ECL 2 A
2009	9	30	7	11	16.	1 ECL 2 P
2009	10	18	1	7	59.	1 ECL 2 P

Times are in Universal Time

Saturn's Moon Eclipses for 2009

1=Enceladus, 2=Tethys, 3=Dione,
4=Rhea, 5=Titan

P=Partial, A=Annular, T=Total

YR	MT	DAY	H	M	S	Event
2009	1	22	7	48	30.	2 ECL 3 P
2009	2	2	5	26	19.	1 ECL 3 A
2009	3	23	4	22	35.	1 ECL 2 P
2009	4	17	7	5	38.	2 ECL 3 P
2009	5	31	3	51	23.	3 ECL 2
2009	6	15	6	8	38.	3 ECL 2
2009	7	12	4	11	14.	3 ECL 2 T
2009	11	1	13	16	45.	1 ECL 2 P

2009 is the International Year of Astronomy

Astronomers worldwide are gearing up for the International Year of Astronomy, a celebration of 400 years of telescopic observations marked from the year 1609, when Galileo first aimed a telescope at the night sky. The Eugene Astronomical Society will put on at least one special event, and maybe several, during the summer months when they're least likely to be clouded out. Ideas include:

- A daytime program with solar viewing and demonstrations of telescope design, telescope-making, and basic viewing techniques
- Educational talks during our First Quarter Friday star parties throughout the year.
- A dark-sky star party during a new-moon weekend so we could show people the real glory of the night sky
- Insert your idea here!

Bring your ideas to the January 22nd meeting and let's brainstorm up a great International Year of Astronomy.

In anticipation of the IYA, EAS member Jeff Phillips took the photo below on December 4, 2008, and pointed out that this is the same view that Galileo saw on December 3, 1609. It's cool to think that Galileo looked at this same lunar phase 399 years ago, and maybe even noticed some of the same features, such as the "X" in the terminator that's only visible for a few hours at precisely this phase.



Copyright © 2008 by Jeff Phillips

The Moon as Galileo saw it on 12/03/1609



Copyright © 2008 by Jeff Phillips

The "X" (left of center)

Superstar Hide and Seek

by Dr. Tony Phillips

From NASA's "The Space Place"

It sounds like an impossible task: Take a star a hundred times larger in diameter and millions of times more luminous than the Sun and hide it in our own galaxy where the most powerful optical telescopes on Earth cannot find it.

But it is not impossible. In fact, there could be dozens to hundreds of such stars hiding in the Milky Way right now. Furiously burning their inner stores of hydrogen, these hidden superstars are like ticking bombs poised to "go supernova" at any moment, possibly unleashing powerful gamma-ray bursts. No wonder astronomers are hunting for them.

Earlier this year, they found one.

"It's called the Peony nebula star," says Lidia Oskinova of Potsdam University in Germany. "It shines like 3.2 million suns and weighs in at about 90 solar masses."

The star lies behind a dense veil of dust near the center of the Milky Way galaxy. Starlight traveling through the dust is attenuated so much that the Peony star, at first glance, looks rather dim and ordinary. Oskinova's team set the record straight using NASA's Spitzer Space Telescope. Clouds of dust can hide a star from visible-light telescopes, but Spitzer is an infrared telescope able to penetrate the dusty gloom.

"Using data from Spitzer, along with infrared observations from the ESO's New Technology Telescope in Chile, we calculated the Peony star's true luminosity," she explains. "In the Milky Way galaxy, it is second only to another known superstar, Eta Carina, which shines like 4.7 million suns."

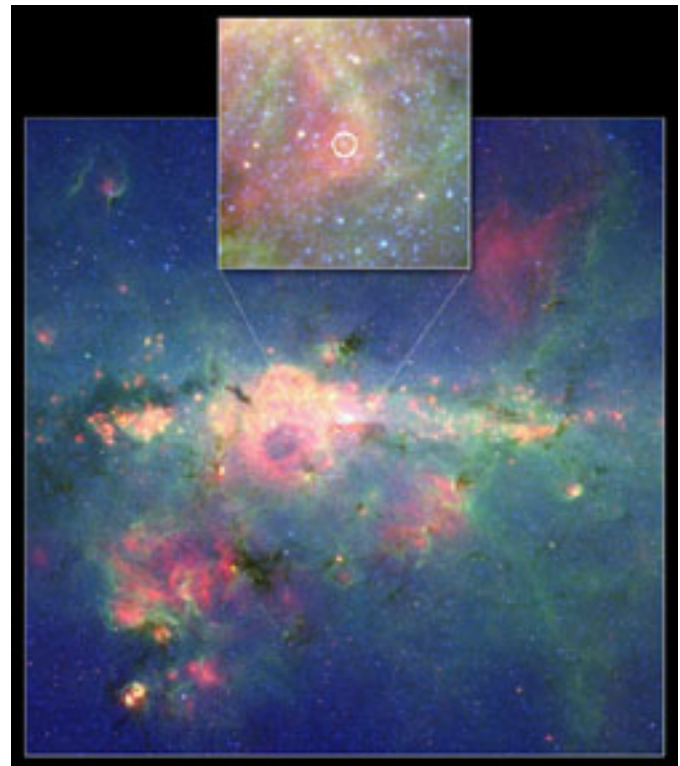
Oskinova believes this is just the tip of the iceberg. Theoretical models of star formation suggest that one Peony-type star is born in our galaxy every 10,000 years. Given that the lifetime of such a star is about one million years, there should be 100 of them in the Milky Way at any given moment.

Could that be a hundred deadly gamma-ray bursts waiting to happen? Oskinova is not worried.

"There's no threat to Earth," she believes. "Gamma-ray bursts produce tightly focused jets of radiation and we would be extremely unlucky to be in the way of one. Furthermore, there don't appear to be any supermassive stars within a thousand light years of our planet."

Nevertheless, the hunt continues. Mapping and studying supermassive stars will help researchers understand the inner workings of extreme star formation and, moreover, identify stars on the brink of supernova. One day, astronomers monitoring a Peony-type star could witness with their own eyes one of the biggest explosions since the Big Bang itself.

Now *that* might be hard to hide.



The "Peony Nebula" star is the second-brightest found in the Milky Way Galaxy, after Eta Carina. The Peony star blazes with the light of 3.2 million suns.

Saturn's Crazy Christmas Tilt

from Science@NASA.gov

You look through the telescope. Blink. Shake your head and look again. The planet you expected to see in the eyepiece is not the one that's actually there. Too much eggnog?

No, it's just Saturn's crazy Christmas tilt.

All year long, the rings of Saturn have been tilting toward Earth and now they are almost perfectly edge-on. The opening angle is a paper-thin 0.8 degrees. Viewed from the side, the normally wide and bright rings have become a shadowy line bisecting Saturn's two hemispheres — a scene of rare beauty.

Amateur astronomer Efrain Morales Rivera of Aguadilla, Puerto Rico, has been monitoring Saturn and he created this composite image to show how the geometry has changed.

Astronomers call the phenomenon a “ring plane crossing.” As Saturn goes around the sun, it periodically (once every 14 to 15 years) turns its rings edge-on to Earth. Because the rings are so thin, they can actually disappear when viewed through a backyard telescope. At the precise moment of crossing, Saturn undergoes a startling metamorphosis. The ringed planet becomes a lonely ball of gas, almost unrecognizable.

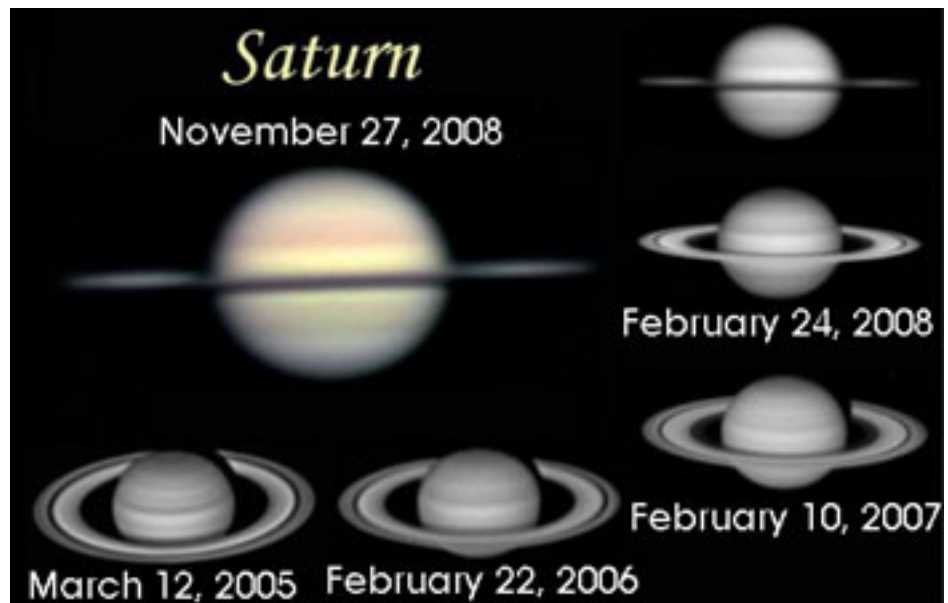
Historical note: Shortly after Galileo discovered Saturn's rings in 1610, they disappeared in precisely this fashion. Galileo didn't understand the nature of the rings and the vanishing act confused him mightily. Nevertheless, his physical intuition prevailed. “They'll be back,” he predicted, and without ever knowing why, he was correct.

We're not quite there yet. The opening angle won't be precisely 0 degrees until Sept. 4, 2009. Don't bother marking your calendar, though. Saturn will be so close to the Sun, no one will be able to see the rings wink out.

The best time to look is now.

The 0.8-degree opening angle of Christmas 2008 is the minimum for some time to come. In January 2009 the rings begin to open up again, a temporary reversal caused by the orbital motions of Earth and Saturn. By the time narrowing resumes in summer 2009, Saturn will be approaching the Sun; looking through a telescope then could actually be dangerous. The next ring plane crossing that's easy to watch won't come until 2038.

So as soon as you can, point your telescope at the golden “star” in Leo and behold Saturn's crazy Christmas tilt.



Saturn's changing orientation from March, 2005 to November, 2008