

Doug's Deep Sky Challenge

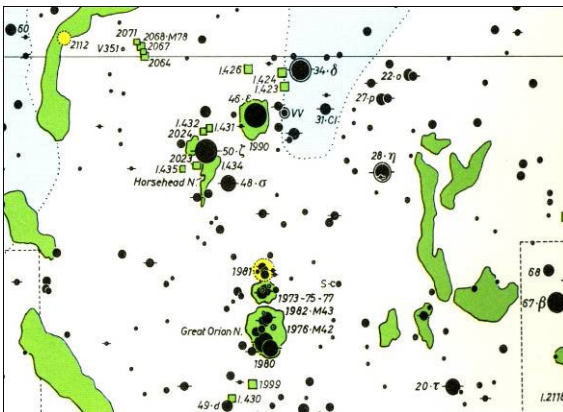
by Doug Scobel

NGC 1990 – Fact or Fiction?

While pursuing the Herschel II observing list, a follow-up program to the more well-known Herschel 400 list, I encountered many a challenging object. Some had very low surface brightness and were difficult to see in the moderately light-polluted skies of southeast Michigan; some were perhaps a clump in a larger structure, like a bright knot in one of a large spiral galaxy's arms; and some didn't appear in the charts I was using and I had to go to the Internet to find out where to look. But I ended up tracking them all down – all except one. NGC 1990. Now that I'm done with it, I found it to be more than just a challenge. In fact, I doubt its very existence!

NGC 1990 is cataloged as a diffuse nebula surrounding Epsilon Orionis, also known as Alnilam, the middle star in Orion's belt. It was discovered by Sir William Herschel in 1786. The New General Catalog (NGC) describes it as "a magnificent or otherwise interesting object, extremely large, extended, Epsilon Ori involved preceding". It's listed as being about 50 x 10 arc minutes, though on charts (it appears in Sky Atlas 2000, Uranometria 2000, Millennium Star Atlas, and I'm sure others) it looks to be almost as wide east-west as it is north-south. Here's a section of chart 11 from Sky Atlas 2000 that shows Orion's belt and sword region, including NGC 1990:

(chart copyright Sky Publishing Corp., used with permission)



Sounds simple enough, from the description it ought to be a piece of cake. But speaking for myself, it has proven to be anything but!

I've attempted to observe this nebula on several occasions, from Peach Mountain to the darker skies of Cherry Springs State Park to the pristine skies at the Okie-Tex star party. I've looked for it in everything from my 13.1-inch Dob to an 80mm TMB refractor. I've tried various light-pollution reducing filters. I've tried direct vision and averted vision. I've tried moving the star outside the field of view and letting the field drift by. Nothing. In no case could I ever conclude that there was anything there. Alnilam is 2nd magnitude, so there will be glare surrounding it regardless of what telescope you are using, and I cannot convince myself that I'm seeing anything other than that glare.

I am not alone in my skepticism. NGC 1990 is conspicuously absent from noted visual observer Steve Gottlieb's observations, which is suspicious in itself. See <http://ngcic.org/gottlieb/default.htm>. In the NGC-IC Project (www.ngcic.org) you'll find the following quote from Dr. Harold G. Corwin, Jr.: "In spite of this nebulosity having been "seen" by WH, JH, [William and John Herschel, respectively] and Dreyer, as well as by several amateurs in recent years, there is no trace of nebulosity on any photograph of the area. JH suggested that the nebulosity extends at least 12 arcmin north and south of Epsilon Orionis, while Dreyer makes it more extensive to the south. (On the POSS1 red plate, the star is apparently close to the center of an extended, striated nebulosity. This, however, is not visible on any other photo, including several color photos that would certainly show a red nebulosity if it existed. This striation is a defect on the red plate, apparently caused by imperfections or reflections in the red Plexiglass filter.) It is just possible that this may be another case like IC 349 (which see) which is so close to Merope as to be not easily imaged. Until Eps Ori is imaged in such a way that the star can be removed to show the nebulosity that the Herschels and Dreyer saw, we have no choice but to call NGC 1990 an illusion."

Experienced observers being fooled into seeing something that is not there is not without precedent. Charles Messier saw nebulosity around M40, which has been proven to be simply a double star. And consider this note by Steve Gottlieb: (<http://observers.org/tac.mailing.list/2005/Sep/0143.html>): “*Consider the case of NGC 4530. On no less than four separate nights, John Herschel recorded a "nebulous atmosphere" about 3' diameter about this 4th magnitude star. There's no trace of nebulosity on any images around the star though. Dew on his eyepiece? Very poor seeing? Expecting to see something that just wasn't there? Whatever the reason, here was a very experienced observer being fooled.*” There are other examples easily found on the Internet should you care to look.

There is some evidence supporting its existence, though. If you do a Google search for images of NGC 1990 you'll come across several instances of this image, one of which being found at

<http://upload.wikimedia.org/wikipedia/commons/8/8a/Ngc1990.jpg>:

(image copyright Glen Youman, <http://astrophotos.net/>, used with permission)

I've matched it against charts of the Alnilam region and it indeed is the right area. It shows some faint, blue, reflection nebulosity. But from what I've seen this is the only image of Alnilam that shows any nebulosity there. Virtually every other image I've found shows nothing other than glare around the star.



Youman's image notwithstanding, the image below is the first of two that clinch the non-existence of NGC 1990 for me. It can be found at http://apod.nasa.gov/apod/image/0701/oriondeepwide_gendler_f.jpg:



(image copyright Robert Gendler, <http://www.robgendlerastropics.com/>, used with permission)

The above image goes deeper into the nebulosity surrounding this area than just about any other I have seen. Once you get over the splendor of it, take a close look at the middle star of Orion's belt (at just above center on the left). Compare it against Delta Orionis, the belt star to Epsilon's upper left. They look pretty much the same don't they? In fact there's a blue glow surrounding all of the bright stars in the image. But isn't there more around Epsilon compared to Delta? They're both second magnitude stars, right? Not so fast my friend! Epsilon is magnitude 1.7, while Delta is only magnitude 2.4. You would expect to see a little more glare around Epsilon, and you do. I don't see anything in this image that would indicate that there is nebulosity surrounding Alnilam. There is some reflection nebulosity to the west of Epsilon (just above it in this image) and it is considerably fainter than the elusive IC 434, the emission nebula against which the Horsehead Nebula is silhouetted. If NGC 1990 is truly there, then it must be even fainter than that, making Youman's image a truly remarkable achievement.

Here's another image of the area I found that goes even deeper into the nebulosity permeating Orion. You can find this image at http://antwrp.gsfc.nasa.gov/apod/image/0804/orionwitch_guisard_big.jpg:



Again, there is nothing unusual surrounding Epsilon. Compare that region with the Witch Head nebula seen at lower right of the image. If NGC 1990 truly exists then it must be many magnitudes fainter than even the Witch Head.

So is there really a nebula there? Given the small amount of evidence to support the existence of NCG 1990, and the wealth of evidence against it, my conclusion is that it is indeed simply an illusion. Visual observers who claim to see it are simply mistaking glare from the bright Alnilam for a nebula. Psychologi-

cally they "know" that there is a nebula there, so they see one. In other words, they are using averted imagination! Even if it really does exist, then it must be *extremely* faint, and in my opinion out of the reach of even the largest of amateur-sized telescopes, at least visually. That's my story and I'm sticking to it!

So, I leave you with is this question: NGC 1990 – fact or fiction? We are entering prime Orion observing season, cloudy skies and bone-chilling temperatures notwithstanding. Next time you are out with your scope, take a close gander at the middle star of his belt. I'd like to know – what do *you* see?

(image copyright Stephane Guisard, <http://www.astrosurf.com/sguisard/>, used with permission)

“Just Look Up”

By Liz Calhoun

On a bitter cold evening in February of 2007, when everybody else on my block was indoors with the thermostat cranked up, my housemate and I put on seventeen layers of outer wear and took up position in our driveway, our faces turned to the southwest horizon. I thought I saw the movement of drapes in the front windows of the house directly across the street: someone studying yet more aberrant behavior on the part of two girls already known for being the first to have their walks shoveled after a snowfall and their lawn meticulously mowed in the summer months. **U**nnatural. And here was more proof, as the mercury dropped to 15', two crazy people standing in an ice-caked, sloping driveway looking at the sky.

I turned my face to my housemate and said, “This reminds me of the evenings that my mom would drag us out onto the front lawn to look at Telstar!” But I imagine it probably sounded like “Fruzzznufffummelstrrrrrmmmmssssmrrrr!” through a hood, a balaclava, and a thick woolen scarf. “Harrrrrrr,” she agreed. We went back to looking up. I checked my watch, rolling up twelve sleeves to find its face. We were two minutes late. Did we miss it? (No, my watch was fast: the ISS is ALWAYS on time.)

M.'s gloved hand pointed into the distance, and there came up in an arc a bright jewel steady and sure. The hair stood on the back of my neck. I started to get choked up. That was a SPACE STATION coming toward us overhead, precise in its travel, without anti-collision lights blinking ... In my excitement I slipped on a floe of ice and went down on my bad knee. Onward came the ISS, brightening in the sunset, crossing overhead – gosh, the NASA URL was right, you *could* see the thing from your backyard. We went back inside and warmed up and used the computer to find out when we'd see the ISS again. Over the course of the spring and summer we got used to its rhythms and went out of our way to look up and see it. One occasion after a shuttle launch, we thought we'd lagged behind our time frame again and got outside to see our jewel trailing away into the east. But within moments another jewel soared soundlessly overhead, and we realized like a blow that we'd seen the shuttle *and* the ISS that night. All you had to do was look up.

When the news of Comet Holmes's mysterious explosion appeared in the media that fall, my housemate said, “Where is this thing? I want to see it.” We went into the driveway in October of '07, a bit warmer than that February ISS sighting previously, and put our birding binoculars on the fuzzy baseball hanging in the northeast. “Wow,” said M. “Wow,” I nodded. I started to think about how easy that was, to see a comet from my driveway. The next day I went to Border's and bought the current *Sky & Telescope*. Then I bought a book on binocular astronomy. THEN I bought a pair of decent basic astronomy binoculars, and then a \$116 Astronomy 101 textbook ... (And then I joined the Lowbrows, but that's getting ahead of my narrative.)

In fact my mother *did* drag us out onto the lawn in the early 60s to see Telstar. She'd earned a BA Ed. from the University of Michigan in 1950, her major in English and minor in General Science. (My dad had his BA Ed. from MSU, in Industrial Arts and Music.) I was the only kid I knew who got tutored in English and lectured on hydrogen fusion in grade school, and was discouraged from attending church and REQUIRED to read as much science fiction as possible. The advent of the first color television in the household was hailed as the event whereby we would finally see Mr. Spock's green complexion. It was obvious that as first-born, I was marked out for a career in Science! One hitch: I just couldn't do the math. Over and over again I frustrated my mother's most cherished dreams: her darling daughter had the mathematical aptitude of a block plane. And astronomy in the 60s and 70s was mostly about math, SLIDE RULE math. When I went off to college in 1977, it was to study Medieval History. I had utterly betrayed my mother.

But I had not betrayed myself: at home in my now-abandoned room were still the posters of moon maps and the planets that came with the cheesy Tasco “zoom” refractor that my parents had bought me for a Christmas present in 1975. My bookshelves overflowed with S-F – I even wrote some of my own to amuse my High School classmates. Doing the research was tough, in the pre-Internet Dark Ages. It meant traipsing down to the Public Library and spending tens of dollars in photocopying, or camping out at the local planetarium for every change of program. But I didn't go any deeper than that. In fact away at college under the East Lansing lights, I did indeed often forget to look up. I watched the original “Battlestar Galactica” like all the other S-F misfits I knew; and I can't explain it, that I lived a science fiction crazy adolescence and young adulthood surrounded by astronomy and “know your night sky” books without really ever immersing myself in the SCIENCE part of S-F. I think it was that math business that somehow seemed to defeat me before the sun even set on a clear night.

And, inexplicably, when I had as a housemate a Dr. Science-type guy with a double degree in Mechanical Engineering and Astrophysics from the U., whose main occupation was drawing components of the high-energy antimatter telescope for a multi-organization project headquartered at the Dennison Building ... even THAT did not motivate me to throw myself headlong into learning the constellations and finishing *A Brief History of Time*.

For me, it all “started” (again) with the ISS and Comet Holmes, and the rest is history. I leafed through that \$116 astronomy text and learned that there was more than one kind of reflecting telescope! And that there were *terrestrial* planets and *jovian* planets. I called Dr. Science, who now lives in Fairbanks, and told him what I’d learned – at the tender age of 48. He chuckled, long distance. “Yes, there’s quite a difference between the terrestrials and jovians.” We had a long talk about the Large Hadron Collider and that famous high-energy antimatter telescope he partly designed, back in ’92-93-94. It was starting to make sense to me – even without the math. I was breathless. All the little bits and pieces of knowledge I’d accumulated over the years were falling into place.

Then this September I went off to my annual vacation to the shores of Crystal Lake, outside Frankfort, MI. It’s a pretty un-light-polluted location. I’d been practicing observing in my backyard, getting in shape with the Teapot asterism, a couple of beefy doubles in Lyra, and extra-credit sprints with the planisphere that I special-ordered from OPT. I was ready to UNDERSTAND what I hoped I would see on my vacation. The first clear night we were out on the dock about 20 yards from the front of our cottage, backsides on the cold aluminum of the decking, Crystal Lake quietly murmuring under us. There was Cygnus, Hercules, and Lyra, then so many more stars grew in intensity as the dark deepened and our pupils widened. My intentions had been the great galaxy in Andromeda and more doubles, but I wound up riveted by the two open clusters in Perseus. My binoculars swung between M31 and those clusters for easily an hour, mosquitoes buzzing around us. I had never before felt as if I owned the sky, but now it was mine mine all mine: it was always there, waiting for me to come out into the dark and, yes: JUST LOOK UP. It never had to be any more difficult than that, and I realized with sincere contrition that I could have been doing it twenty-thirty years ago, and simply didn’t.

So in this coming International Year of Astronomy, if anyone approaches you and asks: WHAT do I need to do to get started in astronomy? Tell them they need a night sky and a moment to look up and just see what’s up there, as our ancient ancestors did long ago. Just look up. That’s all it takes.

Submitted by Dave Snyder

The following is a list of some of the IYA2009 events that will take place in the Ann Arbor area over the next few months. This is the best information I have at the moment, but I expect some additions or other changes.

Ann Arbor/Ypsilanti Reads

The Ann Arbor/Ypsilanti Reads program, launched in 2003, is a community initiative to promote reading and civic dialogue thorough the shared experience of reading and discussing a common book. The book chosen for the inaugural Reads was “Lincoln’s DNA,” by Phillip R. Reilly.

For 2009, the selected book was *Seeing In The Dark: How Amateur Astronomers Are Discovering The Wonders Of The Universe*, by Timothy Ferris.

On Thursday, January 29 from 7:30 to 8:30 p.m. in Towsley Auditorium of the Morris Lawrence Building at Washtenaw Community College, Timothy Ferris will discuss this book as well as his own thoughts on astronomy and the universe around us. A book signing will follow and books will be on sale at this event, courtesy of Shaman Drum. There will be a Lowbrow table at the event.

There are also will be other events related to the reads program, including discussion groups focused on the book. For more information go to <http://www.aadl.org/aareads>

Telescope Workshop

The club meeting in January is a “Telescope Workshop.” This is aimed at people who got recently got a telescope, but don’t know how to use it.

Extra Open Houses

In addition to open houses at Peach Mountain, we will have three extra open houses. All three will be hosted jointly by the Lowbrows and the Student Astronomical Society and will occur with either clear or cloudy skies.

Saturday, February 14. (7-8:30PM). Matthaei Botanical Gardens (1800 Dixboro Road, Ann Arbor, Michigan).

Saturday, March 7 and Saturday, April 4. (8 p.m.-12 midnight). Ingles Mall on the University of Michigan Central Campus. We expect to have one of the rooms in the Modern Languages Building (on Central Campus) available as a warming room and/or to hold a cloudy weather activity.

Saturday Morning Physics

Saturday mornings, 10:30-11:30AM, room 170 Dennison Building, UM Central Campus. See <http://www.saturdaymorningphysics.org/>

February 7, Arthur F. Thurnau Professor of Physics Timothy McKay (UM Physics): (The Big Picture)

February 14, Professor Ted Bergin (UM Astronomy): (How Earth got its Water)

March 7, Nuria Calvet (UM Astronomy): (Star and Planet Formation)

March 14, University Lowbrow Astronomers: "Amateur Astronomy: From Ann Arbor to the Universe."

March 21, Lawrence H. Aller Professor of Astronomy Doug Richstone (UM Astronomy): (Supermassive Black Holes)

March 28, Marta Volonteri (UM Astronomy): (More Black Holes)

April 4, Oleg Gnedin (UM Astronomy): (Small Scale, Large Scale Structure)

Lectures

January 16, Tony England: "The Future of NASA" (Rackham Amphitheater, 7:30 pm)

January 23, Charles Steidel (Caltech), Mohler Prize lecture (1800 Chemistry, 7:30 pm)

February 6, Alan Stern (former NASA Associate Administrator, 1800 Chemistry, 7:30 pm)

February 20, Andrea Ghez (UCLA), 2008 MacArthur Fellow (1800 Chemistry, 7:30 pm)

March 13, Joe Taylor (Princeton), 1993 Nobel Prize Winner (1800 Chemistry, 7:30 pm)

April 3, Fred Adams (UM), 1996 Warner Prize Winner (1800 Chemistry, 7:30 pm)

(There are three lectures scheduled at the Exhibit Museum of Natural History all at 7:30 pm, but I don't have any other information). The dates are January 28, February 18 and March 18).

Science Café

I don't know the topics, but expect they all will be astronomy related. Conor O'Neil's (on Main Street) from 5:30 - 7:30 pm. The dates are January 14, February 11, March 11, April 15.

Exhibitions

"Meanwhile, More Light" (Dennison window mural by Jim Cogswell, opened November)

Out of this World (Astronomical images, Hatcher Gallery, January 22-March 7)

Imaging the Universe (Fine art, A & D Slusser Gallery, February 6-March 6)

Mysteries of the Universe from Michigan (Exhibit Museum of Natural History, January-July)

New Views of the Universe (Multimedia exhibit, Exhibit Museum, January 30-July 30)

ViewSpace Hubble exhibit (Exhibit Museum of Natural History, opens January)

Watchers of the Sky (Special Collections Library, February-April, Rare manuscripts by Galileo, Kepler, and others)

Celestial Maps (Third Thursday in the Map Library, February 19, Also, on-line exhibit at the University Libraries)

Silence by Jim Cogswell (Fine art, Residential College Gallery, March 6-April 10, 2009)

Detroit Works Gallery (Astronomical images, March 15-April 15)

Science Sundays

I'm not sure if these events count as IYA2009 events. The Saline District Library will host a series of talks; each on a Sunday, 2-4PM in the Brecon Room of the Saline District Library.

January 11. Fred Adams (Prof. of Physics, University of Michigan): "Extrasolar Planets: Formation, Migration, and Long Term Evolution."

February 8. Matthew Linke (Planetarium Director, University of Michigan Exhibit Museum of Natural History): "A Journey through Space."

March 1. Brian D. Ottum (President Ottum Research & Consulting): "A Tour of the Universe: Told Through Amateur Astrophotography."

For more information see <http://www.saline.lib.mi.us/sdlscientists.htm>

Other Physics Lectures

(Not part of the theme semester, but it's an excuse to show a couple photographs). The Physics department holds several public lectures each year (in addition to Saturday Morning Physics). David J. Gross, H. David Politzer and Frank Wilczek shared the 2004 Nobel Prize in Physics. On October 22, Frank Wilczek came to Ann Arbor and gave a talk "The Universe is a Strange Place." Before his talk, Dr. Wilczek signed copies of his book *The Lightness of Being*. These two photos were taken during the book signing.

Below left: Angelika Cardew and Frank Wilczek. Below right: Otto Cardew, Angelika Cardew, Dave Snyder and Myron Campbell (Myron Campbell is the chair of the UM Physics Department).

Photos courtesy the UM Physics Department and were taken by Donald Goings.



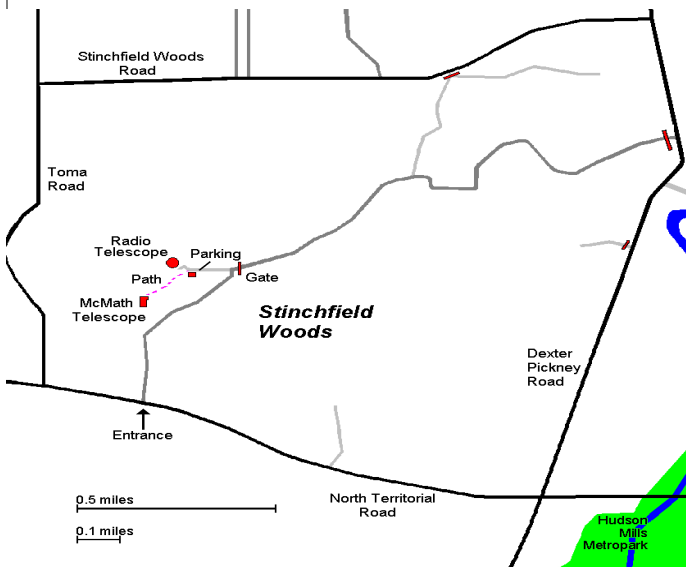
2009 University Lowbrow Astronomers' Schedule of Events

- **Saturday, January 3, 2009.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset). [Open House at Peach Mountain.](#)
- **Sunday, January 11, 2009.** (2-4PM). [Science Sundays](#) (hosted by the Saline District Library). Fred Adams (Prof. of Physics, University of Michigan): "Extrasolar Planets: Formation, Migration, and Long Term Evolution." Saline District Library, Brecon Room.
- **Friday, January 16, 2009.** (7:30PM). [Monthly Club Meeting.](#)
- **Saturday, January 24, 2009.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset). [Open House at Peach Mountain.](#)
- **Thursday, January 29, 2009.** (7:30 to 8:30 p.m). Timothy Ferris will discuss his book "Seeing In The Dark: How Amateur Astronomers Are Discovering The Wonders Of The Universe" as well as his own thoughts on astronomy and the universe around us (hosted by the 2009 Ann Arbor/Ypsilanti Reads Program). Towsley Auditorium of the Morris Lawrence Building at Washtenaw Community College. Books will be on sale at this event; a book signing will follow.
- **Saturday, February 7, 2009.** (10:30 AM). [Saturday Morning Physics](#) (hosted by the University of Michigan Physics Department). Topic to be announced.
- **Sunday, February 8, 2009.** (2-4PM). [Science Sundays](#) (hosted by the Saline District Library). Matthew Linke (Planetarium Director, University of Michigan Exhibit Museum of Natural History): "A Journey through Space." Saline District Library, Brecon Room.
- **Saturday, February 14, 2009.** (10:30 AM). [Saturday Morning Physics](#) (hosted by the University of Michigan Physics Department). Topic to be announced.
- **Saturday, February 14, 2009.** (7-8:30PM). [Star Party at Matthaei Botanical Gardens](#) (1800 Dixboro Road, Ann Arbor, Michigan). All ages. Advance reservations required, call 734-647-7600. Fee: \$5 per person (no discounts—no refunds), \$2 per child (through high-school), University of Michigan students free; you may pay the evening of the event (exact amount only). A University bus will shuttle U-M students to and from the gardens for this special event. (This event will occur regardless of weather conditions).
- **Friday, February 20, 2009.** (7:30PM). [Monthly Club Meeting.](#)
- **Saturday, February 21, 2009.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset). [Open House at Peach Mountain.](#)
- **Saturday, February 28, 2009.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset). [Open House at Peach Mountain.](#)
- **Sunday, March 1, 2009.** (2-4PM). [Science Sundays](#) (hosted by the Saline District Library). Brian D. Ottum (President Ottum Research & Consulting): "A Tour of the Universe: Told Through Amateur Astrophotography." Saline District Library, Brecon Room.
- **Saturday, March 7, 2009.** (10:30 AM). [Saturday Morning Physics](#) (hosted by the University of Michigan Physics Department). Topic to be announced.
- **Saturday, March 7, 2009.** (8 p.m.–12 midnight). Telescope viewing hosted by the University Lowbrow Astronomers. Location to be announced, probably Ingles Mall on the University of Michigan Central Campus.
- **Saturday, March 14, 2009.** (10:30 AM). [Saturday Morning Physics](#) (hosted by the University of Michigan Physics Department). Topic to be announced.
- **Friday, March 20, 2009.** (7:30PM). [Monthly Club Meeting.](#)
- **Saturday, March 21, 2009.** (10:30 AM). [Saturday Morning Physics](#) (hosted by the University of Michigan Physics Department). Topic to be announced.
- **Saturday, March 21, 2009.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset). [Open House at Peach Mountain.](#)
- **Saturday, March 28, 2009.** (10:30 AM). [Saturday Morning Physics](#) (hosted by the University of Michigan Physics Department). Topic to be announced.
- **Saturday, March 28, 2009.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset). [Open House at Peach Mountain.](#)
- **Saturday, April 4, 2009.** (10:30 AM). [Saturday Morning Physics](#) (hosted by the University of Michigan Physics Department). Topic to be announced.
- **Saturday, April 4, 2009.** (8 p.m.–12 midnight). Telescope viewing hosted by the University Lowbrow Astronomers. Location to be announced, probably Ingles Mall on the University of Michigan Central Campus.
- **Friday, April 17, 2009.** (7:30PM). [Monthly Club Meeting.](#)

Places & Times

Dennison Hall, also known as The University of Michigan's Physics & Astronomy building, is the site of the monthly meeting of the University Lowbrow Astronomers. Dennison Hall can be found on Church Street about one block north of South University Avenue in Ann Arbor, MI. The meetings are usually held in room 130, and on the 3rd Friday of each month at 7:30 pm. During the summer months and when weather permits, a club observing session at the Peach Mountain Observatory will follow the meeting.

Peach Mountain Observatory is the home of the University of Michigan's 25 meter radio telescope as well as the University's McMath 24" telescope which is maintained and operated by the Lowbrows. The observatory is located northwest of Dexter, MI; the entrance is on North Territorial Rd. 1.1 miles west of Dexter-Pinckney Rd. A small maize & blue sign on the north side of the road marks the gate. Follow the gravel road to the top of the hill and a parking area near the radio telescopes, then walk along the path between the two fenced in areas (about 300 feet) to reach the McMath telescope building.



Public Open House / Star Parties

Public Open Houses / Star Parties are generally held on the Saturdays before and after the New Moon at the Peach Mountain observatory, but are usually cancelled if the sky is cloudy at sunset or the temperature is below 10 degrees F. For the most up to date info on the Open House / Star Party status call: (734)332-9132. Many members bring their telescope to share with the public and visitors are welcome to do the same. Peach Mountain is home to millions of hungry mosquitoes, so apply bug repellent, and it can get rather cold at night, please dress accordingly.



Membership

Membership dues in the University Lowbrow Astronomers are \$20 per year for individuals or families, \$12 per year for students and seniors (age 55+) and \$5 if you live outside of the Lower Peninsula of Michigan.

This entitles you to the access to our monthly Newsletters on-line at our website and use of the 24" McMath telescope (after some training).

A hard copy of the Newsletter can be obtained with an additional \$12 annual fee to cover printing and postage.

Membership in the Lowbrows can also get you a discount on these magazine subscriptions:

Sky & Telescope - \$32.95 / year

Astronomy - \$34.00 / year or \$60.00 for 2 years

For more information contact the club Treasurer. Members renewing their subscriptions are reminded to provide the renewal notice along with your check to the club Treasurer. Please make your check out to: "University Lowbrow Astronomers"

Newsletter Contributions

Members and (non-members) are encouraged to write about any astronomy related topic of interest.

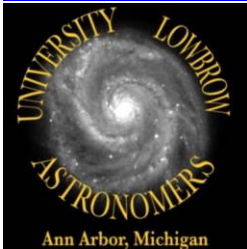
Lowbrow's Home Page

<http://www.umich.edu/~lowbrows/>



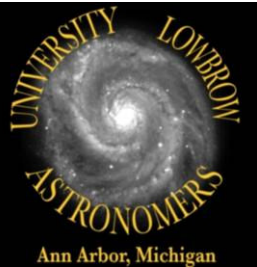
**University Lowbrow
Astronomers**

Reflections & Refractions



Website

www.umich.edu/~lowbrows/



*For more information about the
International Year of Astronomy
please check out:
www.astronomy2009.org*

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