

Upcoming Events

April 2003

- **Friday, April 18** (Starting at 7:30) University Lowbrow Astronomers' Club Meeting held in either room 130 or 807 in the Dennison Building. Elections and Swap Meet.
- **Saturday, May 3** (Starting at Sunset) Regular Scheduled Open House and Star Party at the Peach Mt. Observatory. Weather permitting.
- **Thursday, May 15** Total Lunar Eclipse visible from 9:05 PM to 2:17 AM
- **Friday, May 16** (Starting at 7:30) TBA held in either room 130 or 807 in the Dennison Building.
- **Saturday, May 24** (Starting at Sunset) Regular Scheduled Open House and Star Party at the Peach Mt. Observatory. Weather permitting
- **Saturday, May 31** (Starting at Sunset) Regular Scheduled Open House and Star Party at the Peach Mt. Observatory. Weather Permitting.



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REFRACTIONS



of the University Lowbrow Astronomers



April 2003

May's Total Lunar Eclipse



On May 15, there will be a total lunar eclipse easily visible in Michigan (assuming it is clear). The eclipse will start at 9:05 PM and end at 2:17 AM. Totality will last 1 hour and 37 minutes. At totality, the moon might be almost invisible, or it might be bright orange, copper/red or dark red. It is difficult to predict, since the brightness and colors are affected by the exact geometry of the eclipse, and by atmospheric conditions. It is entirely possible that oil fires in Iraq could affect the appearance (assuming they are still burning in May) as could other atmospheric factors. The only way to find out the actual appearance is to look for yourself. •

- Dave Snyder

Elections and Swap Meet

Friday, April 18th

This month, the Lowbrows are holding elections for the various club offices. Many members have said that this is the duller meeting of the year (although I can think of some April meetings that were extremely entertaining). Some members avoid it because they dislike "politics". Robert Heinlein said that politics were invented to allow the world's most dangerous animal to get things done...without fighting (usually). Please attend. With us, your opinion matters and your vote counts. Furthermore, if you don't vote, you'll have no reason to complain, for the rest of the year!

If that isn't reason enough to be there, the vice-presidents have decreed that there will be a swap meet after elections. Here's your chance to clean out your basement, make some money, and get some entirely new junk to fill up all that newly empty space. •

Lowbrow Astronomers 2003 Election Nominees

The candidates listed below are those nominated at the March 2003 meeting. Further nominations for these and other positions will be taken at the April meeting prior to Elections. Please note that the proposed bylaws preclude the President from simultaneously holding either a Vice Presidency or the Treasurer's position. *Photos courtesy of Dave Snyder and Jens Zorn.* ●

Treasurer



Charlie Nielson



Jim Wadsworth



Mike Garrahan



Charlie Nielson

President

Vice President

(Four

Required)



Jim Forrester



Bernard Friberg

Observatory Director



Kurt Hillig



Mike Radwick

Newsletter Editor

Webmaster



Mike Garrahan



Mike Radwick



John Ryan



Dave Snyder

University Lowbrow Astronomers Club Annual Report – 2003

My Fellow Members,

Our club has had a fine year. (If that's good enough for you, then you don't have to bother reading the remainder of this report.)

If you want specifics, keep reading.

Our membership increased from fewer than five score to more than one hundred (at last count). Our treasury saw \$4126.63 income for the year and \$4650.47 in expenses.

The observatory roof mechanism was rerigged with a new cable, and further improvements to the system are soon to be incorporated. The primary and secondary mirrors for the 24" telescope were recoated, presently yield beautiful images, and are expected to last for a decade or more. Our most dedicated members, as they always have, did a lot of hard work, and we are all grateful each time we look through the telescope.

Our newsletter is excellent, and continues to improve. This is due, again, to a lot of hard work by a small number of us. A special note of thanks must go to Mark Deprest, whose efforts on our behalf over the last four years have been, pardon me, stellar. Kudos, Mark.

The April meeting will open with a ratification vote on our new bylaws. The bylaws committee faced a formidable task, and completed it superbly. I firmly believe that our new and improved bylaws provide an organizational structure that will further solidify our position with respect to the University, and all consideration was given to further amend and improve the bylaws as needed. In fact, Dennis Joswik noted that there is as yet no provision for inventorying club property, so there's our first bylaws amendment to be considered!

The new bylaws also provide for two new committees: one for Communication and Public Relations and one for the Observatory. I strongly encourage my fellow Lowbrows to volunteer to serve on one of these committees, especially if your participation in club activities has been limited so far. I've learned that more involvement brings more enjoyment. Your club should be more to you than just a monthly newsletter!

Some members who have never held an officer's position in the past have graciously accepted nominations, and I am hoping for a large turnout for elections at the upcoming meeting. We are indeed fortunate to have these volunteers, as some turnover in these positions is vital to the club's future. Unfortunately, Bernard Friberg has chosen not to continue as Observatory Director. In his nine years of stewardship, thousands of members of the public have enjoyed countless hours of excitement and learning in our observatory, guided through the constellations by Bernard's vast store of knowledge. His dedication and gentle manner have consistently made our open houses and other events into wonderfully positive experiences, and increased the other members' participation and thus their enjoyment as well. We must also never forget his bulldog's tenacity in the fight against the gas station project, undertaken with foresight, diplomacy, great aplomb and no small amount of courage. Surely, if there is anyone who exemplifies what the Lowbrows are all about, it is indeed none other than "Uncle Bernard" himself. Thank goodness we won't be losing his knowledge or enthusiasm; he was the first to volunteer to serve on the Observatory Committee! We all owe him our most sincere thanks for his many years of tireless service.

Serving as your President has been challenging, exciting, and a great deal of fun! The experience would have been less rewarding without the assistance and wise counsel of Vice Presidents Doug Warshaw, John Causland, and Dave Snyder. Dave's service as Webmaster is also a strength our club can ill afford to be without. The officers and committee members of this past year are to be commended for their efforts on our behalf, and congratulated for their successes in working through the problems the club has faced. Although I have chosen not to take an officers' position this coming year, I am looking forward to working on the Observatory Committee, and attending more open houses.

Please accept my thanks for allowing me to serve as your President, and know that I'll be helping the new President as much as possible, and not letting officers off the hook if they mess up. See you at the next meeting! Respectfully submitted this 14th day of April, 2003.

D.C. Moons●

Page 3

It's Cool to be Square!

by Doug Scobel

When it comes to collimation of your Newtonian reflector, anyway. When all your optical elements are square to each other, or in other words, are collimated, then your telescope is producing images as good as it can deliver, and life is good. But if they are misaligned, even a little, then your scope isn't living up to its capability.

But this is easier said than done. Having just finished a little refurbishment on my 13" homemade Dobsonian, including replacement of the focuser (requiring realignment of everything), I thought I'd pass on a few tips I discovered during the process.

First, you have to start with the focuser. If the focuser is not square to the tube, then you will never be able to fully collimate the optical path. The easiest way to do this is with a laser collimator. First, remove the secondary mirror, sometimes referred to as the diagonal mirror. Insert the laser collimator, and turn it on. Measure the distance between the projected beam on the opposite side of the tube and the end of the tube. Adjust the tilt of the focuser until that distance matches the distance from the end of the tube to the center of the focuser. Some focusers have adjusting push-pull screws for adjusting the tilt. If yours does not then you'll have to use shims of some sort.

Next, ensure that your spider is exactly centered in the tube. If you are offsetting the diagonal (which is usually done only in fast focal ratio, large aperture Newtonians), then offset it away from the focuser by the offset amount. Whether your diagonal is going to be offset or not, it must be exactly centered laterally, or side-to-side. While you are at it, make sure that you have adequate tension in the spider vanes. Just like spokes in a bicycle wheel, the vanes need to have tension in them to maintain the spider's position, and to provide sufficient rigidity to support the secondary mirror.

Now clamp up a threaded rod in the central hole in the spider. The beam from the laser collimator should strike it exactly along the center line of the threaded rod. If it does not, then adjust the tilt of the focuser up and down until it does. Making this adjustment may upset the longitudinal adjustment you made earlier. You may have to go back and forth between the two adjustments until they are both correct.

Now that your focuser is exactly square to the tube, it's on to the secondary mirror. This is where things get tricky. Should you offset the diagonal, or should you not? Should you mark the center of the primary, or should you not? What about marking the center of the diagonal? In my scope, I indeed have offset the diagonal, and marked the center of the primary mirror, and marked the offset center

of the secondary. Being a 13.1" f/4.5, I felt that offsetting the diagonal was worth the trouble. Actually, I think that in a fast system, offsetting the secondary mirror makes its alignment easier, rather than more difficult. Unfortunately, there's too much for me to discuss here regarding diagonal offset, marking your mirrors, etc., (maybe a future article?), so I'll simply describe the procedure with a scope set up like mine.

First, ensure that your primary mirror is installed, and that it is exactly centered in the tube. Place a Cheshire eyepiece in the focuser. When sighting through the peephole, adjust the secondary until the dot on the secondary is lined up with the center mark on the primary. Now adjust the tilt of the secondary until the primary mirror is centered in the outline of the secondary. If the center dot on the secondary no longer lines up with the center mark on the primary, then you will probably need to adjust the position of the secondary longitudinally in the tube. If it is off laterally, then either your spider is not centered in the tube, or your focuser is not square, or both. Again, you'll probably have to go back and forth between the two adjustments a few times until you get it all just right.

Once you are satisfied with the alignment of the focuser and the secondary mirror, you are most of the way home. All that remains now is adjusting the tilt of the primary mirror. Simply adjust its tilt until the reflection of the peephole is exactly centered on the center mark on the primary. That's all there is to it!

Now this is about as good as you can do it on the bench. To get it "perfect", you'll need to get it out under the stars. Point your scope at a star, and put in a high power eyepiece. I like to use Polaris, because it's always in the sky (for those of us here in North America, anyway), and it won't move on you, even at high power. Center the star in the field, and then purposely de-focus it. The image should expand to a disk, and the shadow of the secondary mirror should be visible in the center. If everything is aligned correctly, then the secondary's shadow should be offset away from the direction of the focuser just a tad (it should be exactly centered with a non-offset secondary). If it is not, then tweak the primary until it is. You should only have to make minor adjustments at this point. If it is a significant amount off, then you have something misaligned further upstream, and you'll have to go back and double check your other adjustments.

While you're at it, you should now align your finder(s) so that Polaris is centered in them, too. This will make finding things a lot easier.

There! You're collimated! And you thought that it wasn't cool to be square!



The Saga of a Detached Retina -

An Astronomer's Perspective

by John Causland

3/31/2003 - the day before April Fool's Day, but it might as well have been the day itself.

About a week and a half earlier, I'd noticed a huge floater appear in my right eye, the observing eye of course, and, taking things in stride, as usual, I watched it dissipate over the next two days. I knew I would soon see a friend who I knew had had a similar experience with floaters that rivaled the Orion nebula. Mine even had occasional flashes of light off to the side. Hey, meteors in the field of view too. My friend's ophthalmologist heard my story, but didn't schedule me for evaluation until 2 weeks later. Huge floaters are pretty common in, well, aging eyes, and not "usually" a cause for concern.

Fortunately, another good friend heard my story and said it sounded to her like a detached retina which her mother had. Google, here I come. Hmmmm, uh, yeah, my symptoms, when added together, make up a detached retina. After a week and a half, the floater was gone, but seemed to have "settled" into the lower 15% of my field of view. Still some little meteor flashes at night. Better call the ophthalmologist back. My internet self diagnosis was, as he said later, correct.

Hearing my story over the phone, he had me come right in on Monday morning the 31st. Doing a complete eye exam, he had a great time telling me what a fantastic job the surgeon did who performed radial keratotomy on me 12 years ago, giving me better than 20-20 eyesight to this day. But he also found a 1 mm tear in the back of my eye. The dark patch that I was seeing was the "veil" or "curtain" appearance of a 30% detached retina. He sent me off to lunch with instructions to head straight to the U-M Kellogg Eye Center afterwards. In the meantime, he made all the arrangements for me to be seen right away. This is a sooner-the-better situation. The longer the wait, the more the retina detaches. I should really have been seen right away of course, especially in "light" of the phantom meteors in my peripheral vision. The retina feels pressure and in response does some kind of gamma ray decay.

A wonderful female ophthalmologist took entire care of the situation. The technologies involved are pretty incredible, which is why I'm writing this only 3 days later. She found, on evaluation, two tears - 2mm, 1mm and a suspicious spot. As the earlier ophthalmologist did, she brought me up to quick speed on how the eye is constructed and how, in aging eyes, often the vitreous humor fluid sack will pull away from the back of the eye and never be problematic, and you never notice the "vitreous detachment." But, in 1% of cases, the pulling away causes a

tear that allows fluid to leak behind the retina. In my case, two tears. So much for good health - especially strong attachments to tear. The fluid causes the thin sheet of the retina to lift away and float up.

The doctors explained to me all the alternatives to reattach the retina. Imagine hearing that only a few decades ago, blindness was inevitable for that eye! Two of the methods were more extreme ways of reattaching the retina involving lasers, but also had to do surgery within the eye. A simpler, and as she said, more elegant method, is what they used. Knowing where the holes are, my eye was jockeyed around so she could use a cryogenic liquid nitrogen probe to tack weld the holes shut. This scars tissue through all the layers of the eye. With the holes sealed, they then injected about 4 cc of an inert Freon-like gas (C3F8) into the eyeball to press against the retina and force it up into place and reattach. No, I will not go into how it felt to be quite awake through the cryogenic thing, being asked to look up, down, right, left, etc., only somewhat numbed out, feeling a bit of the cold sting of -196 C liquid nitrogen. No, I'll spare that part of the story.

"Pneumatic Retinopexy." Yes, gas pressure. Force that thing back into place. One hitch. It's a gas bubble, a regular gas bubble. It floats. It takes up 25% of my field of view. Tilt my head forward and I feel like a carpenter's level. The bubble floats across my field. But, it's important for the bubble to stay up where it belongs. Not a problem for most of the day, but I'm learning to sleep upright in a LazyBoy lounge for the next 7 days. How elegant is this, really???

The next day, ooow, that sucker is red. But, I have to say, pain was never a part of the deal. Well, there was the half hour with the cryo... No, we don't have to go there. Gotta get used to the bubble in the LOWER half of the field of view. Remember, the eye is a lens, reverse image. The doc did joke with me that it was good that the detachment was at the top, or I'd have to hang upside down. When I go back for a post evaluation a day later, she informs me that there's only an 80% chance of success, but then goes on to take a look. They have to be cautious first and not allow you to be overly optimistic. She looks long and hard and says over and over, "this couldn't look any better". The retina has completely reattached overnight. The retinal pumps have squished out all the water. We actually give each other a high five.

The gas bubble will take six to eight weeks to reabsorb, leave my body, and then go on it's merry journey up to the stratosphere to destroy some ozone. But, it did a good job when it needed to. I'm not home free entirely yet, until a week is up. More tears could occur. As to why this happened? They all agree that my eyes are quite healthy, if aging. Why am I part of the 1%? My female ophthalmologist is Indian - "Bad Karma". Really, she said that. There is no explanation. Now, hopefully, my good karma will get me through the rest of it all. In the meantime, a note of

thanks to modern technologies, steady hands, and the intuitions that we follow that pop out of the cosmos.

Reflections following the one week checkup: No, I wasn't quite home free. An additional tiny tear appeared in the retina, giving reason for another trip to visit the liquid nitrogen cryogenic probe. But, heck, it was only one tear this time. I ask a lot of pent up questions. Yes, I can retire the Lazy Boy. But, I must not sleep face up. The lens of the eye apparently gets deprived of oxygen from the gas bubble and I will likely have an early cataract as a result.

Great... The up side to the gas bubble: You've likely seen magnifying glasses with little tiny super power lenses ground into them too. I've got the same deal. When I look through the gas bubble, which is huge, 20% of my field of view, it's like being very near sighted. I tried on some KMart specs yesterday and it's better than the 2.5 diopter highest magnifying reading glasses sold.

This sounds kind of like fun, but this is all happening in my dominant eye. I must look "over" the bubble to see things. It rises to within 10% of my central vision. The volcanic ash that characterized the first few days of my

floaters has decreased to a steady light drizzle of tiny floaters. If this were my non-dominant eye, it would probably be no big deal, but now I also have to wear sunglasses all the time - so people looking at me will stop staring at my redeye.

If the bubble is supposed to disappear in 6-8 weeks, why is it not shrinking? But, as long as it's there, I can't run or jog. Hey, that's the only exercise I get! And I do all the membership for the 600 person Ann Arbor Track Club. This, on top of having to switch my "observing" eyes! Is there some kind of cosmic justice here somewhere? If I claim to be observing extra detail in the festoons on Jupiter's belts, please just tolerate me.

Treasurer's Report 2002

As the year 2002 ended, the Lowbrows were 105 members strong, which was a net gain of 2 or 3 from the beginning of the year. Financially we ended with a net loss, which was primarily due to expenses for recoating the McMath telescope mirrors. Also to consider is that the publications that we sell are paid for entirely in year 2002, but some of the proceeds did not come in until 2003. Despite this, we finished with a net profit in that department. Subscriptions will not necessarily balance out since they may cross over to the next year as well. The "other" category is for miscellaneous one-time expenses or incomes that do not fall into one of the usual categories. An example is gas money we forced upon the members who drove to and from Chicago to transport the mirrors. Our income and expenditure totals for the year, as well as the monthly average are listed below.

INCOME:	TOTAL FOR YEAR	MONTHLY AVERAGE
Dues	\$1748.00	\$145.67
Subscriptions	\$1258.48	\$104.87
Publications	\$1100.95	\$91.75
Other	\$8.00	\$0.67
Donations	\$11.20	\$0.93
TOTAL:	\$4126.63	\$343.89
EXPENSES:		
Newsletter publication	\$518.51	\$43.21
Postage	\$409.80	\$34.15
Subscriptions	\$1317.43	\$109.79
Publications	\$735.40	\$61.28
Observatory	\$1100.00	\$91.67
Events	\$66.09	\$5.51
Telephone	\$45.34	\$3.78
Web site	\$50.00	\$4.17
IDA dues	\$100.00	\$8.33
Donations	\$200.00	\$16.67
Refunds	\$0.00	\$0.00
Other	\$107.90	\$8.99
TOTAL:	\$4650.47	\$387.54
OVER/SHORT	\$523.84	\$43.65

- Charlie Nielson

Join the Lowbrows, See the world.



Lowbrow Astronomers at Yerkes Observatory. *Photo by Peter Alway. See page 8 for details.*

20 Years Ago Today...

On May 5th, 1983, a group of Lowbrows gathered for a photograph by the Dennison Building, before embarking on an overnight field trip to Yerkes Observatory. On that trip, Tom Ryan met Helen Lungerhausen, which eventually produced your Newsletter Editor. ("Hey, Lowbrows, I owe you!" - Tom Ryan)

Left to Right, the participants are Unidentified, Helen Lungerhausen, Marion Burgess, Charlie Unbehauen, Terry Moyer, Mike Potter, Unidentified, Unidentified, Tom Ryan, Doug Nelle, Kevin Le-wallen, Peter Alway, and Chandrian Gopala Krishna.



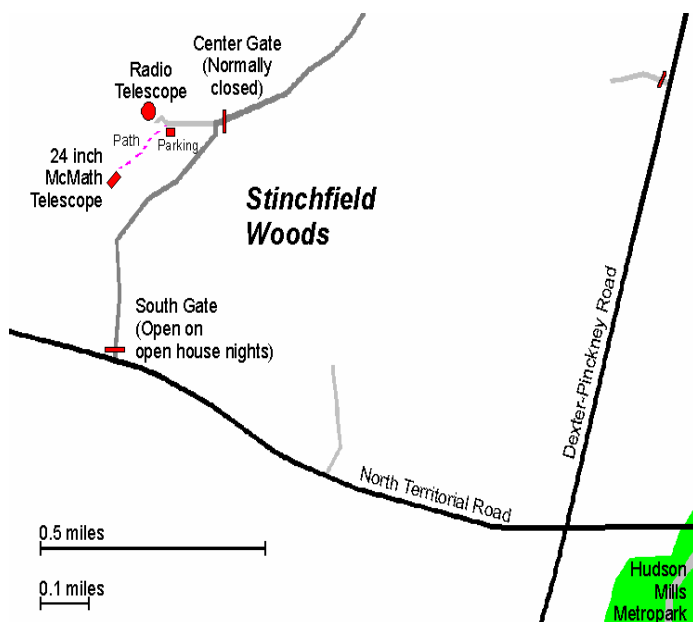
Lowbrow As-
tronomers at Yerkes Observatory.

About the University Lowbrow Astronomers

The University Lowbrow Astronomers is a club of Astronomy enthusiasts which meets on the third Friday of each month in the University of Michigan's Physics and Astronomy building (Dennison Hall, Room 130 or 807). Meetings begin at 7:30 PM and are open to the public. Public star parties are held twice a month at the University's Peach Mountain Observatory on North Territorial Road (1.1 miles west of Dexter-Pinckney Road; further directions at the end of the newsletter) on Saturdays before and after the new Moon. The party may be canceled if it's cloudy or very cold at sunset. For further information call (734) 480-4514.

Places and Times

Dennison Hall, also known as The University of Michigan's Physics and Astronomy building, is the site of the monthly meeting of the University Lowbrow Astronomers. It is found in Ann Arbor on Church Street about one block north of South University Avenue. The meeting is held in room 130. Monthly meetings of the Lowbrows are held on the 3rd Friday of each month at 7:30 PM. During the summer months, and when weather permits, a club observing session at Peach Mountain 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 inch telescope which is maintained by the Lowbrows. The observatory is located northwest of Dexter. The entrance is on North Territorial Road, 1.1 miles west of Dexter-Pinckney Road. A small maize-and-blue sign marks the gate. Follow the gravel road one mile to a parking area near the radio telescopes. Walk along the path between the two fenced in areas (about 300 feet) to reach the McMath telescope building.

Public Star Parties

Public Open House/Star Parties are held on the Saturday before and after each new Moon at the Peach Mountain Observatory. Star Parties are canceled if the sky is cloudy at sunset or the temperature is below 10 degrees F. Call 480-4514 for a recorded message on the afternoon of a scheduled Star Party to check on the status. Many members bring their telescopes and visitors are welcome to do likewise. Peach Mountain is home to millions of hungry mosquitoes - bring insect repellent, and it does get cold at night so dress warmly !

Amateur Telescope Making Group meets monthly, with the location rotating among member's houses. See the calendar on the front cover page for the time and location of next meeting.

Membership

Membership dues in the University Lowbrow Astronomers are \$20 per year for individuals or families, and \$12 per year for students and seniors (age 55/+). This entitles you to the monthly REFLECTIONS newsletter and the use of the 24" McMath telescope (after some training).

Dues can be paid to the club treasurer Charlie Nielsen at the monthly meeting or by mail at this address:

6655 Jackson Road #415
Ann Arbor, MI 48103

Magazines

Members of the University Lowbrow Astronomers can get a discount on these magazine subscriptions:

Sky and Telescope: \$29.95 / year

Astronomy: \$29.00 / year

For more information contact the club Treasurer. Members renewing subscriptions are reminded to send your renewal notice along with your check when applying through the club Treasurer. Make the check payable to "University Lowbrow Astronomers".

Newsletter Contributions

Members and (non-members) are encouraged to write about any astronomy related topic of interest. Call or Email to Newsletter Editor at: John Ryan (734) 662-4188 john_edward_ryan@hotmail.com to discuss length and format. Announcements and articles are due by the first Friday of each month.

Telephone Numbers

President:	D. C. Moons
Vice Presidents:	John Causland (734) 747-8437
	Dave Snyder (734) 747-6537
	Doug Warshaw (734) 998-1158
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Observatory Director:	Bernard Friberg (734) 761-1875
Newsletter Editor:	John Ryan (734) 662-4188
Keyholders:	Chris Sarnecki (734) 426-5772
	Fred Schebor (734) 426-2363

Lowbrow's Home Page

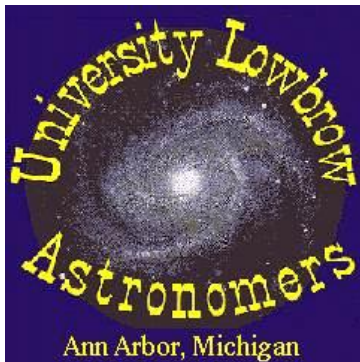
<http://www.umich.edu/~lowbrows/>
Dave Snyder, webmaster



Lowbrows at Saturday Morning Physics

During the fall and winter, the U-M physics department hosts a series of multimedia presentations called Saturday Morning Physics. These presentations are aimed at the general public. Generally you can find several Lowbrows in attendance.

Jens Zorn of the U-M Physics Department took photographs during some of the recent presentations. This is one of the photos and shows Mike Radwick, Lorna Simmons, Dick Sider, Bernard Friberg after a presentation in February 2003.



UNIVERSITY LOWBROW
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Lowbrow's WWW Home Page:
www.umich.edu/~lowbrows/

Check your membership expiration date on the mailing label.