

REFLECTIONS / REFRACTIONS

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University Lowbrow
Astronomers

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CLEAR II: What? When? Where? Why? Who?

By Mark S Deprest

What is CLEAR II? In short its Club Lowbrow's Excellent Atlanta Retreat and since this will be the second one held at the same site its numbered II. The more detailed explanation is; that its a star party weekend at one of the darkest sites within 3.5 hrs of Ann Arbor, MI that is strictly for Lowbrows. Its camping on a private site with great horizons right next to your telescope, observing all night long, sleeping half the next day just to do it all over again the next night.

When is CLEAR II? Because the site is only a few hours drive north of Ann Arbor, MI we have the unique ability to schedule and cancel based on the weather conditions for any particular weekend with minimal notice. However, since we are guests on someone else's property; I have 2 weekends "CLEARed" with the owners of the site for this spring. The first weekend is May 6th thru May 8th and the second or make-up weekend is May 27th thru May 31st. On Thursday at 4pm before the weekend an email will be sent out with a final decision on "GO or NO GO" for the event, this decision will be based on weather conditions for that up coming weekend.

Where is CLEAR II going to be held? The short answer is on the farm / home of Mike Wurtsmith and Diane Ives just west of Atlanta, MI. The more precise answer is; N45:01:26 W084:16:23 at 1084 ft above sea level. Driving directions from Ann Arbor, MI are:

US-23 north to I-75 north to exit 202

M-33 north thru Mio, MI and Fairview, MI to M-32

At M-32 turn left and head west thru Atlanta, MI and go about 5 miles west of town.

M-32 will turn south, at this turn right onto Manier Rd and follow it north for about 1 mile then it turns left for about 1 more mile

At the T turn right onto Secrist Rd and go to the top of the hill (about 500yds) and Diane & Mike's place is on the right.

From Ann Arbor, MI it is about 220 miles by this route most people would be able to get there in about 3.5 hours.

Why go to CLEAR II? Well, if you are looking for dark skies to locate those faint fuzzy objects, and you want a nice relaxing weekend, and you would like to hang out with some really cool people (fellow Lowbrows). Then this is a great way to do it. The skies at this site rival some of the most popular national Dark Sky Star Parties and they are only 3.5 hrs away. Think about it ... leave work at 4pm on Friday, drive a few hours and start setting up your telescope in one of the darkest places in lower Michigan by 7:30pm.

Who is going to CLEAR II? Well, you if you want to and as of this writing, there are over a half dozen Lowbrows interested in going. Here is a list of people who expressed more than just a passing interest:

Mark S Deprest – with an 18" scope known as "Blondie"

Brian Ottum – with an 18" scope

George Piner – scope unknown

Mike Radwick – 14" Starmaster

John Causland* - 24" Starmaster

Don Fohey – 10" Dobsonian

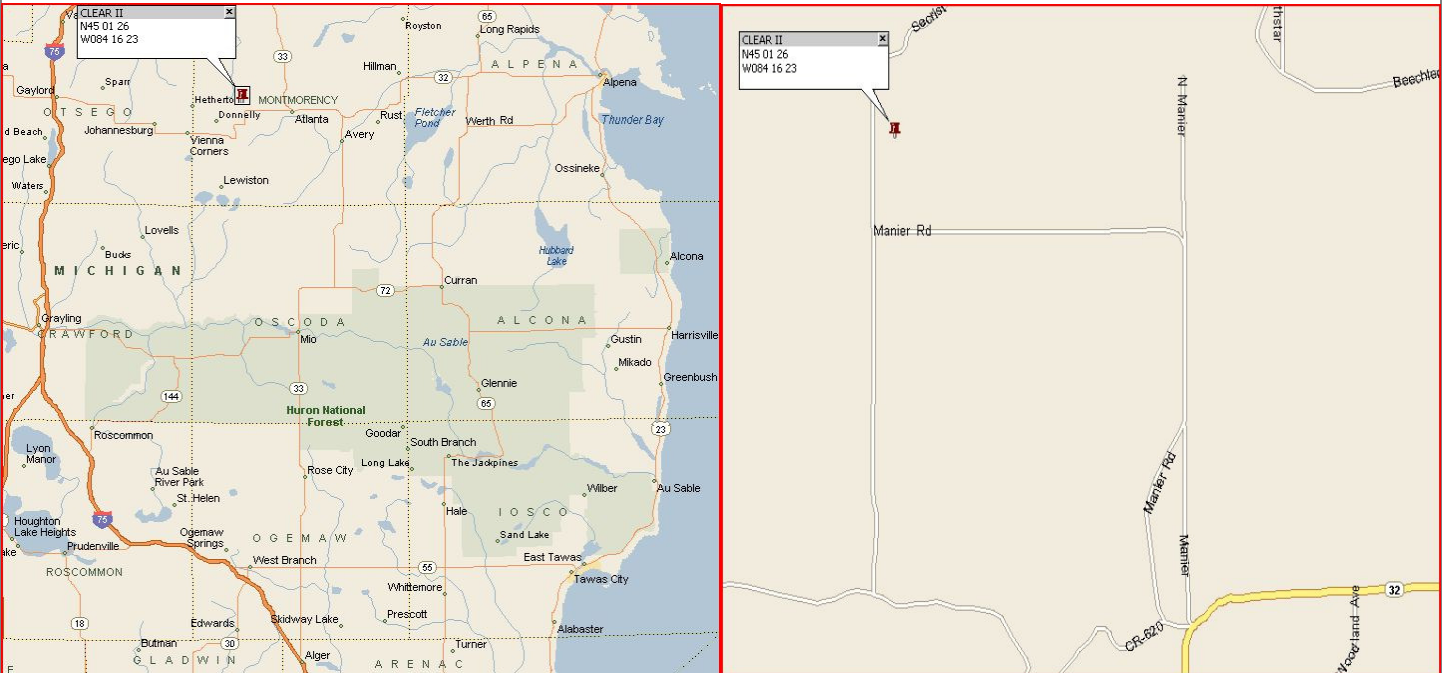
Dipankar Maitra – scope unknown

Dave Jorgensen – scope unknown

If you are interested send me an email and I'll put you on the list too, if we get the spring CLEAR II in the books I will begin planning CLEAR III for the autumn and as long as the hospitality of our hosts holds out we'll keep on having CLEAR events.

** John Causland hasn't told me for sure that he wants to go, but it is assumed because these little get-aways were spawned by him.*

The following maps and pictures are provided from last fall's CLEAR I and should give you an idea of what you can expect.





“Conversion Factor”

Norbert Vance

EMU Physics and Astronomy

A year ago I gave a few presentations about the conversion of an observational astronomer, yours truly, to that of planetarian, one who sells the idea of an artificial sky to the public. I found myself immersed in the construction of a rather unique astronomy teaching facility at Eastern Michigan University, a sphere that literally hangs four stories above an atrium, providing a 30 foot dome with seating for 37. With a few months under my belt, have I lost my observational soul and love of the real sky to the fancy bells and whistles of a computer-generated universe with Dolby 7.1? Naw! But it sure IS fun to play with! And as many a planetarian will contend, it may be zero degrees and cloudy outside but it's always cozy and clear under the dome.

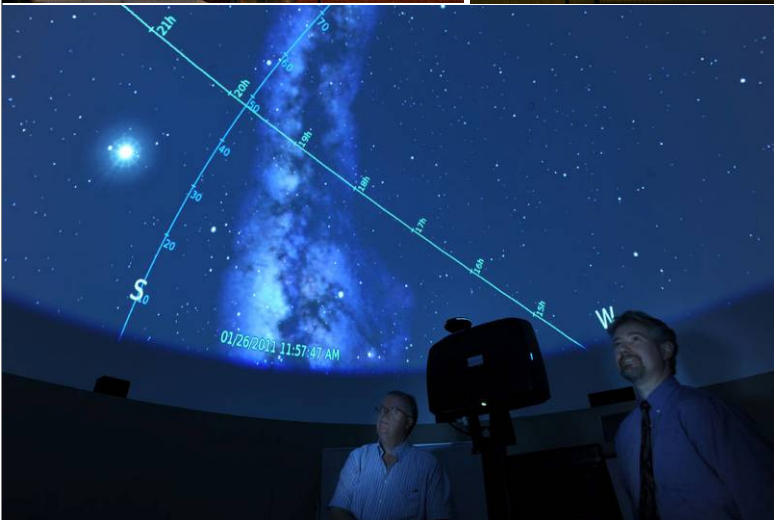
After opening in January in a big push to get up and running, we've spent the past couple months in what amounts to a shake down. Results? In my opinion - success. Is it the best design? Shhh... we HAVE a planetarium!! Could things have gone better? Sure, but given the extremely tight budget, the state economy, the schedule, and the fact that the University is in the process of renovating its two major classroom buildings simultaneously, things have been falling into place remarkably well. We look forward to getting a schedule of public programs up and running beyond what we've been doing for introductory astronomy classes the past few months. I count myself very lucky.

As an instructor at an institution that prides itself on the education of teachers, one of the most prolific in the country at that mission, I always felt strongly that EMU should have a planetarium to cement ideas and concepts in astronomy. Many of these teachers would potentially go on to schools that have their own planetariums. When news of the renovation and enlarging of our primary science building appeared a few years ago I suggested we push for a lab with a domed ceiling to replace our quaint umbrella in Sherzer. Be careful what you ask for! I've had help from folks in the Great

Lakes Planetarium Association (GLPA), two very supportive and excited department heads (I've managed to convert a plasma physicist to an astronomer in short order), some dedicated student assistants, and financial support from current and emeritus faculty in the Physics and Astronomy Department to provide seed money.

The modestly priced Digitalis Digitalium Epsilon projector is hardly the best on the market but dollar for dollar it's not bad. The simulations are surprisingly convincing and full dome effects as good as those I've seen in other facilities with far more expensive projectors. Some will mumble "there's pixilation" but then take any HD projection and spread it across a 30 foot dome and you'll see that. I hear plenty of "ooh's" when we zoom on a planet or run forward from a day sky into a star-filled night. Frankly, spending hundreds of thousands, even millions of dollars for some of those systems I've seen, hmmm... The controller is essentially a hand held TV remote-like paddle that can turn, well, a plasma physicist into a planetarian in seconds. Even a veteran like me finds it so EASY to use. It packs a technical punch. And the point is to teach astronomy, for all of our staff. The Nightshade-based system does that remarkably well. I'll let the Low-brows judge for themselves when they visit in July. I look forward to that meeting.

Sherzer Hall, home of Sherzer Observatory, is now undergoing replacement of its aging HVAC system which will close our astronomy lab and historic artifacts room for the next few months. The umbrella is down but may return. We will still have access to the observatory and roof level, and the planetarium of course will continue to demand my attention. But I can almost hear the 10-inch apo crying from across the courtyard, "where are you... where are you?" Worry not ye faithful telescope, Saturn still beckons... the REAL Saturn! - NLV



Why Astronomy? Part III

By Mark S Deprest

Hello again, this is part III of a multi-part series of articles that is being put together from a packet of 3x5 cards that were handed out by Norbert Vance to all of the attendees at our July 2010 meeting held at EMU. Norbert did a great talk about all the things that lead him to a career in teaching astronomy at the college level (sometimes I think its not that much different than teaching it at third grade level), and then asked all of us to write down what was the inspiration that brought us to astronomy. Norbert then collected the cards, handed them to me and challenged me to put an article together for our newsletter with them. After reading through them numerous times I found a number of different factors led people to astronomy. So, I began to categorize them and this has produced at least 6 different articles. Here I present Part III, formal education or planetariums. Enjoy.

One of our fellow lowbrows wrote very simply, "my high school science teacher had a 'star party' at school on the rooftop when I was 16 or so. That got me hooked." Another member wrote that Cranbrook School & Bill Shultz their Physics teacher ran the planetarium was the spark that lit the flame in their astronomical heart.

George Ferrier, whom will hear more about in part VI, wrote that going to the Abrams Planetarium in Lansing, MI was instrumental in his love of a starry night. Dave Snyder found a similar inspiration at the Abrams Planetarium and along with monthly astronomy talks by Jim Loudon at U of M and his brief job with astrophysicist, Dr. Hegyi to lead him to the Lowbrows.

Jason Maguran wrote that his inspiration in astronomy was going to the planetarium in elementary school. He used to check out books from the library about the planets and during his time in middle & high school he would look for the planets in the night sky. But the most elusive one was Mercury and he recounted that he only found it many years later.

Many of you reading these little anecdotes are probably thinking that is how I got my start or you can relate similar experiences to the answer the question "Why Astronomy?". This is the end of Part III and if you feel you can contribute to future articles in this series, please send them along. I would love to keep this going as long as possible. Part IV will be about those inspired by Books and other media and if this sounds like you send me your story. Part V will be about those "first scopes" and the inspiration from "paying it forward." Part VI is very special and one that will touch many of you very profoundly, I hope you'll stay tuned.

I want to thank everyone who contributed and especially Norbert Vance who grabbed these up and passed them on!

Final Exam

Mike Radwick

Around Ann Arbor, the arrival of spring also means preparing for the scariest part of the academic semester, final exams. Although my formal school days are far behind me, I often feel that this time of year is also exam time for me. It is time to see if I've completed my winter time endeavors, and determine if am ready for summer observing. Like examination time, you have to be ready; if the sky clears and you're not prepared, then you are out of luck.

For the last 11 years, I have very slowly tried to learn the skills needed to take nice photos of the night sky. I started with a old beat-up film camera; set-up on a tripod, and took long exposure shots though a basic 55mm lens. A couple of weeks later I would have the film developed, much to my disappointment. The worst part was that I couldn't learn from my mistakes because I kept "forgetting" to keep notes about film type, aperture setting, exposure time, and even subject. Really, I was too lazy and did not think it important to keep notes. I thought often of giving up. But one night in particular was truly inspiring, Oct 28, 2000.

That particular evening was a normally scheduled Open House at Peach Mountain. Early in the evening many of us noticed how hard it was to see deep-sky objects, objects appeared washed-out even though the sky was clear. Then Mark Deprest noticed that the northern sky had a funny red color to it. Sure enough an Aurora display was in progress.



Luckily by this time I had gotten in the habit of keeping the camera and tripod with my telescope. Mark was kind enough to instruct me in how to photograph the Aurora (very simple; just shoot for 20 – 60 seconds, remember to take the lens cap off, set the focus to infinity, and don't worry about anything else). The resulting photos were my first real success, I felt as if I had graduated from photography kindergarten. I go back to these every time I fail at some new technique; they remind me to keep trying.

In "elementary school", I learned how to speak the technical language used at photo printing shops so that my photos were properly developed. Phrases like "push the exposure another F-Stop" and "don't cut the negatives" became part of my vocabulary. I also had good luck there as the people at the shop seemed to understand what I wanted even when I didn't know what I was talking about. They taught me quite a lot, and I'm sad that their business no longer exists. I also learned a little about eyepiece projection, discovered vignetting, but not what to do about it. I attempted piggyback photography by mounting my camera and lens on the back of the McMath 24" scope, using it as a drive to enable long (1 minute and more) wide field exposures. I tried "prime focus" photography using the McMath as a camera lens, but failed to understand why every photo came out black (Now I know the focal ratio has a big impact on exposure times. The McMath, at F25 or so, means you need a couple of hours to image anything at all). I also learned to take careful notes, and started finally to learn from my many mistakes.

I judge my leap to Middle School when I switched from film to digital photography. The reason is that I could finally see what I was doing the moment I took a shot. My images improved almost immediately. But for some reason the majority were still blurry. To correct this I had to start every session by pointing the camera at a bright star, take a photo, adjust the focus, take another photo and compare the results until I had a sharp image. Very time consuming. I had one of those "DUH!" moments and finally realized what is probably obvious to you...If you have ever looked through a telescope right after I've looked through it, you'll remember that everything is *really* blurry. That is the world as I see it in my uncorrected vision. Of course, I was focusing the camera without my glasses, so the camera's focus was set for my crummy vision instead of on the imaging plane. Even with my glasses on, focusing was the hardest part of imaging. The cause is that my glasses don't really correct my vision to a perfect 20/20. "Professor" Clay Kessler finally overheard me grumbling one night at his house, and taught me the solution. He loaned me a device called a "Stiletto" which contains a Ronchi grating. This device splits a star into a series of black and white bars when out of focus. The camera is in focus when no bars can be seen and works independent of my eyeball's. I finally passed the focusing exam and entered High School.

The main focus now is to image using my StarMaster Dobsonian scope as the camera lens. This is not how really advanced photographers work; they use scopes on an equatorial mount. The reason is that the field-of-view will rotate in a Dobsonian scope. If the image is too long, all the stars are elongated, and maybe even stretched into streaks. Any small-scale detail is blurred out. Still, I don't want to buy another scope and mount for photography, so I continue to this day to do things the hard way.

Even though my images on the StarMaster are relatively short (2 minutes or less), the main problem has been tracking. Although the tracking system is pretty good, my exposures frequently have stars that look like stair-cases. Part of the solution is to use another scope and camera, plus a computer to provide "autoguiding". This allows the computer to take a picture, compare the position of a selected "guide-star" with the position from a previous image, and then command the scope to move the back to the correct position. In theory the correction can be made often enough and small enough that the main imaging camera does not see any movement. Alas, the software to command and control my scope did not exist; I had to take "Drivers Ed" in order to create my own software to control the telescope. I've had the help of many people, but need to acknowledge Rick Singmaster (owner of StarMaster Telescopes), Victor McKeighen (owner of Sky Engineering and developer of the tracking system used in StarMaster scopes. Victor modified the software in the tracking system specifically to my needs), and Gary Honis (another more experienced astrophotographer using the StarMaster scope who performed much of the early testing of my software). Like many high school students, I've had many distractions, so perfection of this software has taken two years. You'll have to wait for a future article discussing exactly how this is done.

In the meantime I've learned many other things. One skill is learning how to take many photographs of the same target and "stack" them. Stacking combines the images to eliminate noise, extract fine detail, and allows you to photograph very dim objects even with short exposure times. I mentioned vignetting earlier; the solution is to also take a "flat-frame" and subtract the flat-frame image(s) during the stacking process. A flat-frame can be challenging to obtain; you need a very evenly illuminated light source; something hard to produce in the middle of the night without getting yelled at by your fellow observers. I've learned that light pollution is finally useful for something. A series of photos down at the horizon which semi-saturate the camera can be combined to make a very good flat-frame.

The last skill I'm learning is how to make final adjustments to the photo after stacking. For this I use Photoshop. Brian Ottum has been very helpful by "correcting" some of my photos and sharing the steps he uses along the way. I might write yet another article on this someday, if someone is brave enough to regularly pester me about it. I doubt I'll ever learn everything that can be done at this point – the pros keep inventing new techniques faster than I can learn them. But this too is fun in its own way.

So for this years "final" I have prepared an image of M81 that was taken while observing at John Causland's driveway on March 29, 2011. This image combines pretty much everything I've learned so far. 70 images of M81, plus about 20 calibration (such as flat-frames) were combined to produce this image. Each image was taken with an unmodified Canon



30D DSLR camera at ISO-1000 through a StarMaster F4.3 14.5" telescope. The telescope was guided using a William Optics ZenithStar telescope and a Orion Guiding Camera controlled by software from Stark-Labs called PHD Guiding and my own control software. This images where stacked using free software called Deep Sky Stacker (I really recommend this, it automates virtually every aspect of combining images).

Notice how the stars are stretched out on the right-hand side. This is the effect of field-rotation; my images were slightly too long. There are also a couple of other galaxies visible. See if you can identify them. I hope you decide to give me a passing grade.

M81

Michael Radwick - March 29, 2011
StarMaster F4.3 14.5" - Canon 30D
51 x 70 secs - ISO 1000

The Love of Old Astronomy Books: or Time to Change Meds

By Rudi Lindner

We in Ann Arbor have the advantage of a few good used book stores – not as many as once was the case, but still enough to take up some time browsing. For some reason, astronomy books land on the shelves of the stores fairly regularly, and the inventory cycles through rapidly enough so that any given book won't be orphaned for more than a month or two.

Why should any free-spirited Lowbrow care? Charm is as good a first reason as any. Why was Sir John Herschel's 1846 astronomy textbook still in print in 1906? Why does a wonderful book of pictures claim, in 1930, that the spiral nebulae are certainly within the Milky Way? Why in God's name does a telescope making book in 1954 still recommend using a model T engine block as an equatorial head? Is it that nostalgia is part and parcel of an interest in astronomy? Or is it something psychologically more troublesome, like the persistence of 1956 rock-a-billy tunes as the Muzak at Kroger?

One of the nice things about these books is their proof that we have come a long way. Most of the space is taken up with the planets and nearby stars; usually about ten pages suffice for extra-galactic objects. Today's literature reverses the balance. What will readers think of today's hot astronomy books two generations from now? Or will print be relegated to museums of the oddities of the past?

Pick up one of these books and let your fingers do the walking through their yellowed pages. If the book was published in the first two generations of the twentieth century, there will be illustrations taken from Mount Wilson Observatory instruments. Take a close look at any of the nebular photos, the cutting edge imagery for half a century and more, and then realize that today's amateurs take better images, faster, more detailed, and still have time to get back indoors to see Letterman.

Take a look at pictures of Mars, little blobs with Rorschach test globules, even the best images taken with the fastest film at Mount Wilson or Lick or anywhere in Europe. And then take a look at any careful amateur's photos taken since the 1980s.

Finally, note that there is one unchanging note: awe at what we know and what we expect to know. The older books were less reticent than we are today: splendor, infinite, tapestry, miracle, God's handiwork, all these and more were part and parcel of the popularization of astronomy. The "aha!" moment is forever with us, -- if only our neighbor would turn off his fershlugginer garage light....

Here is an image that was taken via a remotely operated scope & camera system maintained and operated by the good people at Global Rent-a-Scope . This scope is located in southern New Mexico.

Mike Radwick is going to try the same image with his modest set-up ... we should see his efforts in an upcoming newsletter; I saw some of the raw images that he took at Lake Hudson and they looked very impressive ... I can't wait for the final results.

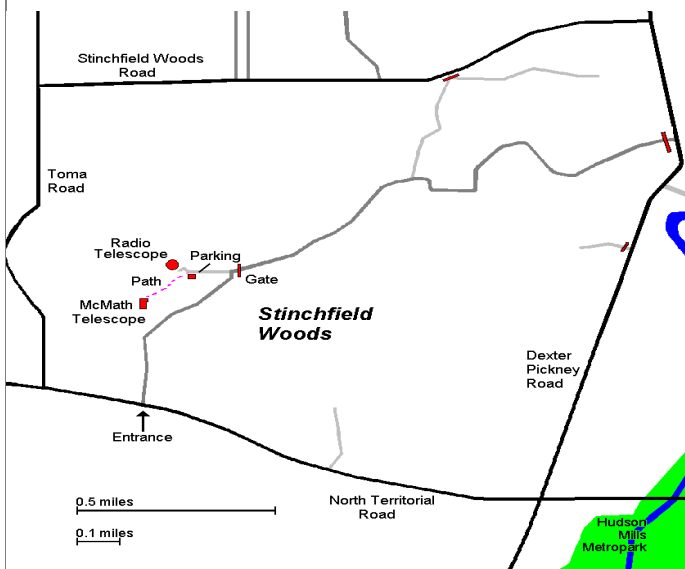


*NGC 2537, NGC 2537a & IC 2233 (Arp 6 Plus)
GRAS 003 - Mayhill, NM USA
2x360 seconds 1x1 binned
20101202
Remotely via Global Rent-a-Scope
Mark S Deprest*

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. Dues can be paid at the monthly meetings or by check made out to University Lowbrow Astronomers and mailed to:

The University Lowbrow Astronomers

c/o Doug Scobel

P.O. 4465

Ann Arbor, MI 48106

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.

Call or Email the Newsletter Editor: **Mark S Deprest (734)223-0262 or msdeprest@comcast.net** to discuss length and format. Announcements, articles and images are due by the 1st day of the month as publication is the 7th.

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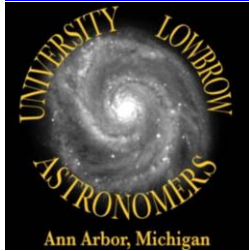


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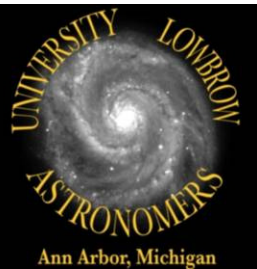
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