

**Highlights of the
October Sky...**

... 4th ...
Full Moon

... 8th ...
Dawn: Saturn is just $\frac{1}{3}^\circ$ to
upper left of Mercury.

... 9th ...
AM: LCROSS spacecraft
and its upper-stage rocket
crash into the Moon at
~7:30 am EDT.

... 12th ...
AM: Castor, Pollux, Mars,
and Moon form a wiggly
line about 20° long.

... 13th ...
Dawn: Saturn is just $\frac{1}{2}^\circ$ to
upper left of Venus.

... 16th ...
Dawn: Waning Crescent
Moon is about 6° to right
of Venus.

Dawn: Saturn is $3\frac{1}{3}^\circ$ above
Venus and Mercury is 8° to
Venus' lower left.

... 18th ...
New Moon

... 21st ...
AM: Orionid Meteor
Shower peaks (10 - 15
meteors / hour).

Dusk: Antares is 3° to 5°
to lower right of a thin
Waxing Crescent Moon.

... 25th ...
First Quarter Moon

... 26th ...
PM: Jupiter is 3° or 4° to
lower left of the Waxing
Gibbous Moon.

... 31st ...
AM: Mars passes through
the Beehive Cluster (M44)
in Cancer. Continues until
November 2nd.



Prime Focus

A Publication of the Kalamazoo Astronomical Society

☆ ☆ ☆ October 2009 ☆ ☆ ☆

This Months Events

General Meeting: Friday, October 2 @ 7:00 pm

Kalamazoo Area Math & Science Center - See Page 8 for Details

Observing Session: Saturday, October 10 @ 7:00 pm

Jupiter & Galaxies of Autumn - Kalamazoo Nature Center

Board Meeting: Sunday, October 11 @ 5:00 pm

Sunnyside Church - 2800 Gull Road - All Members Welcome

Observing Session: Saturday, October 24 @ 7:00 pm

The Great Square - Kalamazoo Nature Center

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September Meeting Minutes



The general meeting of the KAS was brought to order by President Jack Price on Friday, September 11, 2009 at 7:13 pm EDT. Approximately 34 members and guests were in attendance at the Kalamazoo Area Math & Science Center.

Our guest speaker for the evening was [Dale Mais](#) and the topic of his talk was entitled *What can the Modern Day Amateur do in Spectroscopy*. Dale mentioned that he's originally from the west Michigan area, but recently moved back from sunny southern California. Dale's observatory was a "stone's throw" from Palomar Observatory. His current setup includes a Celestron 14-inch SCT, 5-inch Astro-Physics refractor, SBIG ST-8E, and a Paramount ME. For his work in spectroscopy Dale uses the Self-Guiding Spectrograph (SGS) manufactured by SBIG. The affordability of such instrument is credited with starting a new era in amateur spectroscopy.

The current technology also allows for fainter spectra to be obtained in a shorter amount of time. However, Dale explained that identifying the lines in the spectrum still consumes a great deal of time. Astronomers can spend a single night obtaining spectra, but years analyzing all the data. Dale uses the program *Visual Spec* to analyze all his data. Dale went on to show various objects in his vast collection of spectra and identified their spectral characteristics. Some of these include the Saturn Nebula (NGC 7009), Crescent Nebula (NGC 6888), and various Carbon Stars.

Dale recommended the book *Practical Amateur Spectroscopy*, published by Springer, for anyone interested in the subject. Amateurs can also coordinate observations through the American Astronomical Society. See their [web site](#) for more information.

Jack Price said that he (along with Scott Macfarlane) were once again attending the Great Lakes Star Gaze during his President's Report. He also mentioned the *Galileo Writing Contest* (see page 4). Several members reported seeing the International Space Station fly overhead on September 10th. Other members reported observing Jupiter with no Galilean moons visible on September 3rd. This rare occurrence won't happen again until 2019! Al Hanchar gave a detailed account of the bolide that passed overhead during the evening of September 2nd. The *Kalamazoo Gazette* [interviewed Al](#) for their September 3rd edition.

After previewing upcoming September activities, Jack talked about the October General Meeting. Our special guest will be Axel Mellinger from Central Michigan University (see page 8 for more details). It was also mentioned that in lieu

of our usual business meeting we'll have a brief presentation by KAS member Mike Patton. Mike will show pictures of his new house and observatory at the Arizona Sky Village. Mike has offered to give the KAS a spot in his observatory for a robotic telescope. Pursuing this project would mean postponing our long quest to purchase a piece of dark-sky property closer to home. All KAS members are encouraged to attend the October meeting and take part in the discussion. The meeting concluded at 8:58 pm.

Board Meeting Minutes



The KAS Board met at Sunnyside Church on September 13, 2009 at 5:15 pm. The meeting was held in an informal setting on the front lawn, due to unavoidable car problems experienced by President [and keeper of the keys] Jack Price. Board members present were Richard Bell, Jean DeMott, Dick Gillespie, Rich Mather, Mike Sinclair, and Roger Williams (Jack also arrived in due course).

Most of the discussion involved details of the writing contest to be used in selecting recipients of our Galileoscopes. Two drafts of the proposed announcement had been prepared by Richard in the week before the meeting, to speed the process and get the word out as soon as possible. As may be seen in the announcement now available on the KAS website (and on page 4), the deadline for receipt of entries was set for Friday, November 6, 2009. The date was chosen to allow time to evaluate the entries and to choose the winners during the current International Year of Astronomy, although because of the press of holiday events, it was agreed that the awards ceremony itself would probably best be set for mid-January. With the details agreed upon, Richard planned to get the final draft done promptly. Plans were discussed to distribute copies to teachers in southwest Michigan, starting with the KRESA mailing list.

Since we were operating without a copy machine, Rich Mather limited the Treasurer's Report to a simple statement of total assets, which indicated that we are currently in good shape financially. A brief discussion was held of program plans for next year. Bill Nigg is scheduled to speak in January, and Richard suggested bringing back Michael Francis (who portrayed Galileo during our Astronomy Day Events) to do his other available program "Stargazer's Apprentice." Other ideas are pending.

There being no further business, the meeting was adjourned about 6:30 pm. The next meeting was set for October 11th, same time and place (except presumably indoors).

Respectfully submitted by Roger Williams

Your Own Time Machine - Your Telescope

by Tom Koonce

Look up in the sky this evening at the Moon. In the time it takes to read "The Moon light took a second and a half to reach my eyes" it did! The light from our Sun takes about eight minutes to reach us. Farther out in space, Jupiter is high in the evening sky during October. Its light takes approximately forty to fifty minutes to travel the distance to Earth. Can you remember what you were doing five hours ago? Perhaps you were at school or at work. Light that left distant Pluto at that moment five hours ago and is just arriving here. This means that when we look at Pluto, we are seeing it as it looked five hours earlier. In the meantime, an asteroid could be crashing into it right now, erupting into a great plume, but we'd have no way of knowing this yet until the light arrives showing us the scene.

All of the light reflected from objects within our Solar System arrives at Earth in a matter of hours. At the speed of light, this demonstrates the vast distance involved between the solar system objects. When we look up into the night sky and see the stars of our own Milky Way Galaxy, the light has traveled years or even thousands of years to get to our eyes. Some of the light you see started its journey the day you were born and has been on its way ever since - every second of your life the light has been moving 186,000 miles closer. The night sky has objects whose light left them when the Declaration of Independence was signed, the fall of Rome, or when the capstone was set in place at the top of the Great Pyramid... Back farther and farther in time.

With our telescopes pointed outside of the Milky Way Galaxy, we can see the light of much more distant objects in the Universe. The light that we see from the Andromeda Galaxy shows it as it was about two and a half million years ago, long



The Andromeda Galaxy (M31) is the nearest spiral galaxy to the Milky Way. It's only 2.5 million light-years away - practically next door (by astronomical standards).

before modern humans walked our planet. Some common amateur astronomy 'deep-sky' objects are so distant that the light has been on its way to us since the time of the dinosaurs.

Andromeda Galaxy: ~ 2.54 million light-years away

When you think about it, the telescope is a type of time machine, showing us objects as they looked, not as they are at this instant in time, but as they looked at the moment the light left them.

Before your next public star party, it could be a lot of fun to make up a table of objects' distances in units of light-years. Then you can ask a young stargazer to tell you their age and show them the object whose light left it in the year of their birth. There just so happens to be just such a table online already. It can be found on the companion web site to Timothy Ferris' acclaimed PBS special *Seeing in the Dark*. The page is called — appropriately enough — [Birthday Stars](#).

Print out this web page, along with your club's contact and membership information (or application) and a calendar of your club's events and you'll have a great handout that people will enjoy and get them interested in astronomy.

Some Comments on the Chart

Once you look over the chart, you may notice that it's missing entries for several ages — notably 2, 3, 5, and 7 — and that the entry for age 6, Barnard's Star, is too dim to be seen without a telescope. But at greater distances there's a bright star for nearly every age. What's up with that? The reason is that as we go out farther, we're sampling much larger volumes of space, and therefore have more stars to choose from. (The volume goes up as $\frac{4}{3}\pi r^3$, where $\pi = 3.14$ and r is the distance, meaning the radius of the sphere in which we are searching.) In cases where we had several options, we have picked the brightest star visible from northern latitudes.

Certain commercial concerns offer to "name" stars for individuals — at a price. These "star registries" have no official sanction. All astronomical objects are named by the International Astronomical Union, according to internationally agreed-upon protocols which do not permit naming stars for living persons. Stars rarely get names these days, but catalog numbers. But while you cannot legitimately name a star for yourself or a friend or family member, we invite you to observe a star whose light is as old as you are, or they are, and to possess a photo of it if you like. Like the night sky, it's free! The list of Birthday Stars is based on a book project of that title initiated by Timothy Ferris in 1997.

Tom Koonce is a member of the Antelope Valley Astronomy Club in Lancaster, California.



GALILEO WRITING CONTEST

In honor of the 400th anniversary of the first use of an astronomical telescope by Galileo Galilei, 2009 has been declared the International Year of Astronomy (IYA), a global celebration of astronomy's contributions to society and culture. The aim of the IYA is to stimulate worldwide interest, especially among young people, in astronomy and science under the central theme "The Universe, Yours to Discover." To help accomplish this goal, the Kalamazoo Astronomical Society is pleased to announce the *Galileo Writing Contest*!

The *Galileo Writing Contest* is absolutely free to enter and open to students throughout southwest Michigan in grades 4 through 8. The top seventy (70) essays selected by the KAS Board will receive a [Galileoscope](#), a high-quality telescope kit developed for the IYA by a team of leading astronomers, optical engineers, and science educators. With this easy-to-assemble, 50 mm (2 inch) diameter, 25 to 50 power refractor, you can see the celestial wonders that Galileo first glimpsed 400 years ago and that still delight stargazers today. These include lunar craters and mountains, four moons circling Jupiter, the phases of Venus, Saturn's rings, and countless stars invisible to the unaided eye.



Entering the *Galileo Writing Contest* is easy. Just be sure to follow these guidelines:

1. Essay Topic: *Describe, in your own words, how Galileo's use of the telescope changed astronomy.*
2. Format: All essays must be **one page only** with 1 inch margins, typed, single-spaced using Times or Times New Roman font (11 or 12 point).
3. Please place your name, address, and school (with grade) in the upper right hand corner.
4. Please mail your entry to:
Kalamazoo Astronomical Society
c/o KAMSC
600 West Vine, Suite 400
Kalamazoo, MI 49008
5. All essays must be received by **Friday, November 6, 2009.**



Winners will be equally selected in grades 4 through 8 (dependent on the number of entries per grade). The winning entrants will be contacted by mail in mid-December and invited to a special awards ceremony at a time and place to be announced (likely in mid-January). Good luck!



Spitzer, the Sequel

The Spitzer Space Telescope is getting a second chance at life.

The liquid helium “lifeblood” that flows through the telescope has finally run out, bringing Spitzer’s primary mission to an end. But a new phase of this infrared telescope’s exploration of the universe is just beginning.

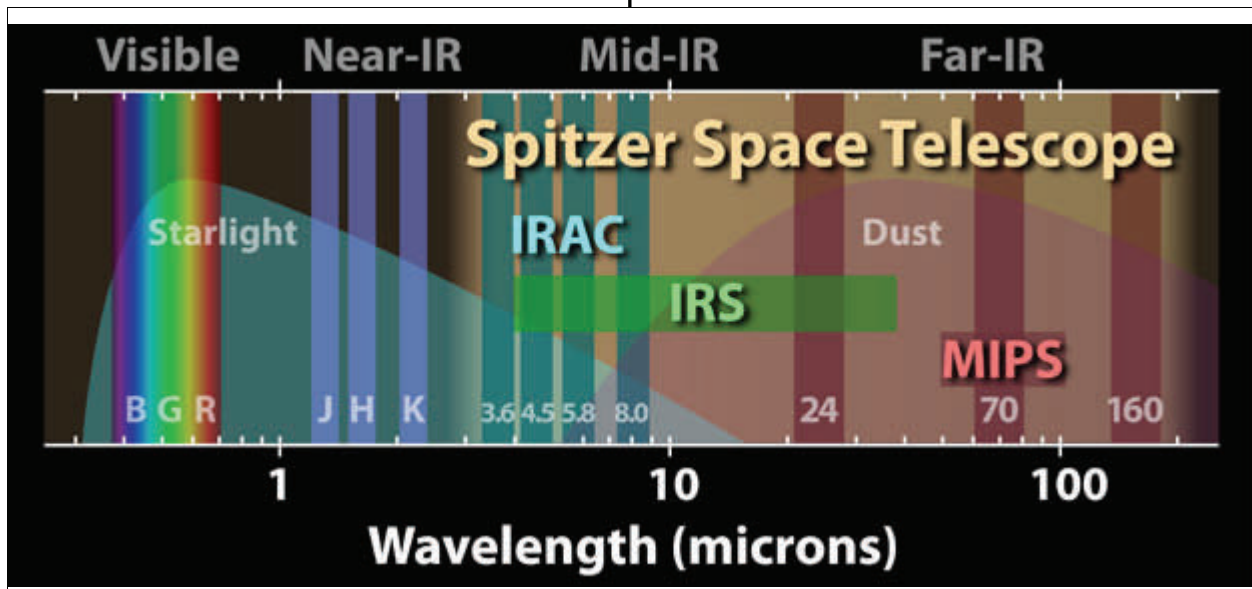
Even without liquid helium, which cooled the telescope to about 2 degrees above absolute zero (-271°C), Spitzer will continue to do important research — some of which couldn’t easily be done during its primary mission. For example, scientists will use Spitzer’s “second life” to explore the rate of expansion of the universe, study variable stars, and search for near-Earth asteroids that could pose a threat to our planet.

“We always knew that a ‘warm phase’ of the mission was a

telescopes. That’s why Spitzer had to be cooled with liquid helium to such a low temperature. Otherwise, it would be blinded by its own infrared glow.

As the helium expires, Spitzer will warm to about 30 degrees above absolute zero (-243°C). At that temperature, the telescope will begin emitting long-wavelength infrared light, but two of its short-wavelength sensors will still work perfectly.

And with more telescope time available for the remaining sensors, mission managers can more easily schedule new research proposals designed for those sensors. For example, scientists have recently realized how to use infrared observations to improve our measurements of the rate of expansion of the universe. And interest in tracking near-Earth



possibility, but it became ever more exciting scientifically as we started to plan for it seriously,” says JPL’s Michael Werner, Project Scientist for Spitzer. “Spitzer is just going on and on like the Energizer bunny.”

Launched in August 2003 as the last of NASA’s four Great Observatories, Spitzer specializes in observing infrared light, which is invisible to normal, optical telescopes.

That gives Spitzer the power to see relatively dark, cool objects such as planet-forming discs or nearby asteroids. These objects are too cold to emit light at visible wavelengths, but they’re still warm enough to emit infrared light.

In fact, all warm objects “glow” with infrared light — even

objects has grown in recent years — a task for which Spitzer is well suited.

“Science has progressed, and people always have new ideas,” Werner says. In its second life, Spitzer will help turn those ideas into new discoveries.

For kids, The Space Place Web site has a fun typing game using Spitzer and infrared astronomy words. Check it out at:

<http://spaceplace.nasa.gov/en/kids/spitzer/signs/>

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

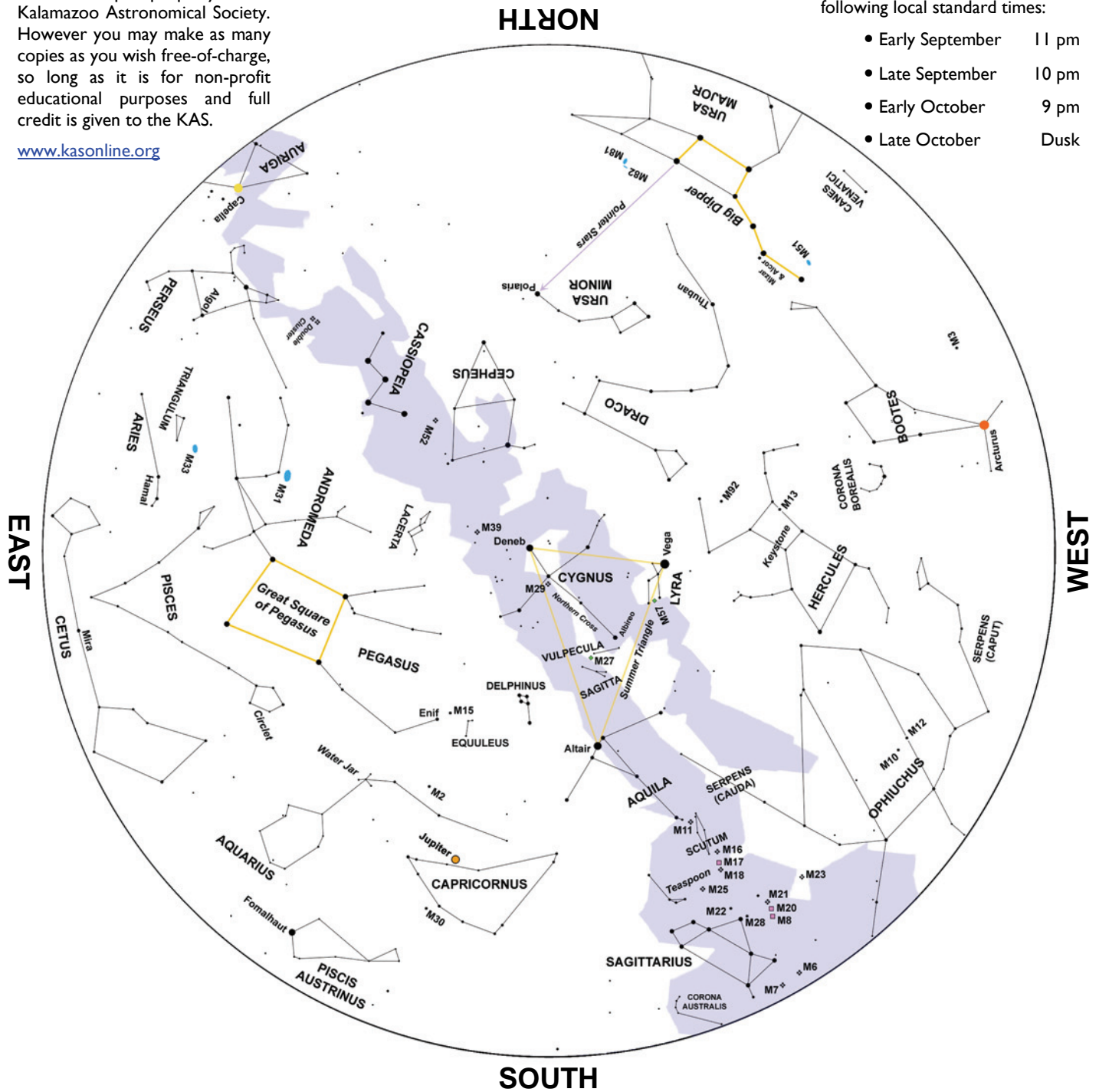
October Night Sky.....

This star map is property of the Kalamazoo Astronomical Society. However you may make as many copies as you wish free-of-charge, so long as it is for non-profit educational purposes and full credit is given to the KAS.

www.kasonline.org

This map represents the sky at the following local standard times:

- Early September 11 pm
- Late September 10 pm
- Early October 9 pm
- Late October Dusk



Saturn has a close encounter with both inferior planets in the morning October sky. The first encounter takes place on the 8th. Saturn will be just $\frac{1}{3}^\circ$ to the upper left of Mercury. Mercury will be the brighter of the two. Saturn then moves to within $\frac{1}{2}^\circ$ of brilliant

Venus on October 13th. Binoculars or a telescope will improve the view in both encounters.

The Orionid Meteor Shower peaks during the early morning hours of October 21st. Expect 10 to 15 meteors to

radiate above the red star Betgeuse in Orion's shoulder.

Mars begins a 3 day voyage through the Beehive Cluster (M44) on October 31st. Mars will be embedded within the cluster on November 1st.

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October 2009

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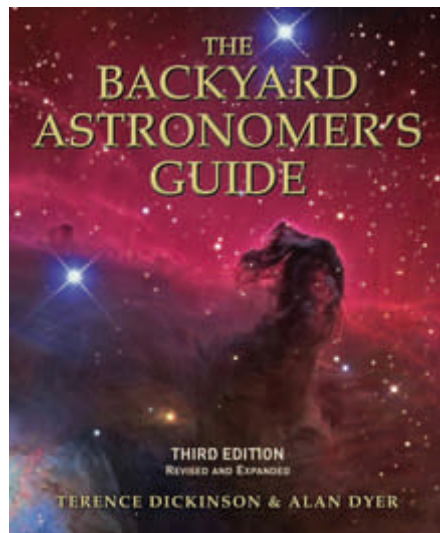
Checkout the ShortTube!

The Kalamazoo Astronomical Society's Orion ShortTube 80mm refractor, mounted on the light and ultra-portable EQ-1 mount, is available for loan.

This little scope gives great wide-field views and can be setup in a snap. Contact the KAS Equipment Manager, **Dave Woolf**, today if you'd like to use it:

e-mail: medalguy@netzero.net

phone: (269) 762-8269



First published in 1991 and revised a decade later in 2002, the new 2008 "Third Edition" of *The Backyard Astronomer's Guide* keeps pace with a hobby that is changing at an ever-increasing rate.

In preparing the new edition, Terence Dickinson & Alan Dyer rewrote material on nearly every page, revising and expanding every topic to cover new equipment and techniques. More than 200 new photos and illustrations accompany these changes.

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OCTOBER STARGAZING DATES

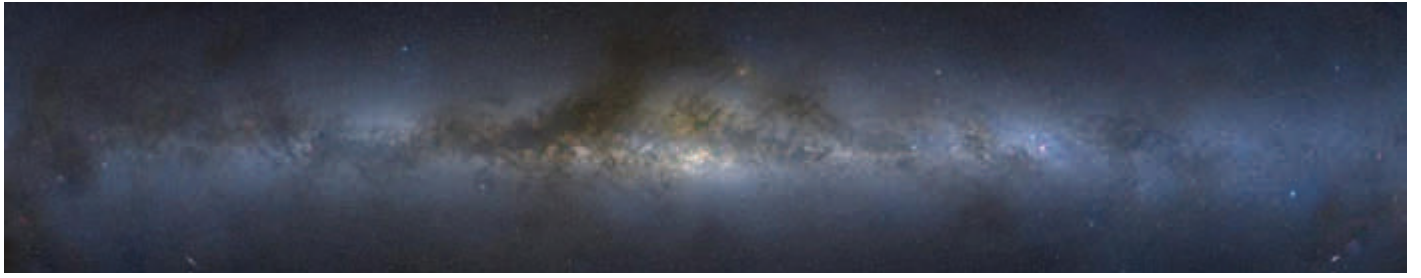
Kalamazoo Nature Center • 7000 N. Westnedge Ave.

Saturday, October 10 @ 7:00 pm
Jupiter & Galaxies of Autumn

Saturday, October 24 @ 7:00 pm
Jupiter & The Great Square



with the **Kalamazoo Astronomical Society**



Stars, Dust & Megabytes: Panoramic Images of the Milky Way

Presented by **Dr. Axel Mellinger**

Assistant Professor of Physics, Central Michigan University

Digital imaging has revolutionized professional and amateur astronomy alike. Traditional darkroom work has given way to computer algorithms, thus creating new possibilities for enhancing low-contrast images and correcting image defects. In particular, the image distortion introduced by wide-angle camera lenses can now be completely eliminated, thus allowing multiple images to be combined into giant mosaics. Using this technique, the author combined 51 wide-angle images, taken over the course of 3 years from various northern and southern hemisphere locations, into a panoramic image of the entire night sky. The talk will feature both the field work in remote areas of California, Europe and southern Africa, as well as the 'digital darkroom' techniques used in creating the mosaic.

Friday, October 2 @ 7:00 pm

*Kalamazoo Area Math & Science Center
600 West Vine, Suite 400 • Use Dutton St. Entrance
- Dutton Entrance Locked by 7:15 pm -*

Kalamazoo Astronomical Society
c/o KAMSC
600 West Vine, Suite 400
Kalamazoo, MI 49008

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