

**Highlights of the
April Sky. . .**

--- 1st ---
Dusk: Mercury is 10° above the western horizon after sunset. Continues until the 15th.

--- 3rd ---
Dawn: Antares is 1° below the Moon before sunrise.

--- 6th ---
Last Quarter Moon

--- 11th ---
Dawn: Waning Crescent Moon is 5° above Jupiter.

--- 13th ---
PM: Mars is less than 2° from the Beehive Cluster (M44) in Cancer. Continues until the 20th.

--- 14th ---
New Moon

--- 15th ---
Dusk: Mercury and a very thin crescent Moon 7° to lower right of Venus. Look low on western horizon.

--- 16st ---
PM: Waxing Crescent Moon is 8° above Venus.
PM: Pleiades is 3.5° above the Moon/Mercury pair.

--- 21st ---
First Quarter Moon

--- 23rd ---
PM: Venus and Pleiades fit within a 5° field-of-view.

--- 24th ---
Astronomy Day

PM: Waxing Gibbous Moon is lower right of Saturn.

--- 25th ---
PM: Waxing Gibbous Moon is lower left of Saturn.

--- 28th ---
Full Moon

Prime Focus

A Publication of the Kalamazoo Astronomical Society

★ ★ ★ April 2010 ★ ★ ★

This Months Events

General Meeting: Friday, April 9 @ 7:00 pm

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

Observing Session: Saturday, April 10 @ 8:00 pm

Saturn & Orion Nebula - Kalamazoo Nature Center

Observing Session: Saturday, April 17 @ 8:00 pm

Saturn & Open Clusters - Kalamazoo Nature Center

Astronomy Day: Saturday, April 24 @ 10:00 am

Kalamazoo Valley Museum & Fetzer Center - See Page 3 for Details

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March Meeting Minutes

The general meeting of the Kalamazoo Astronomical Society was brought to order by President Jack Price on Friday, March 5, 2010 at 7:15 pm EST. Approximately 42 members and guests were in attendance at the Kalamazoo Area Math & Science Center (KAMSC).

Our feature presentation of the night was given by former KAS President and KAMSC teacher Mike Sinclair. Mike's latest talk was called *Astronomy Before Copernicus: The Ptolemaic Tradition*. Mike mentioned the inspiration for this presentation was the book *Copernicus' Secret* by Jack Repcheck. The first of many historical figures covered was the Greek philosopher Aristotle. Aristotle attempted to explain all physical phenomena through observation and logic (or "analytics"), but no experimentation. Much of his scientific work was incorrect and replaced by Newtonian physics. However, the belief in simplicity (*reductio ad nauseum*) is still the basis for much of modern science.

Mike then discussed the works of Claudius Ptolemaeus (*Ptolemy*). Ptolemy attempted to explain the retrograde motion of the planets (especially Mars) by introducing epicycles in Aristotle's geocentric model of the universe. This Ptolemaic model held back our understanding of the solar system for the next 1500 years. Nicolaus Copernicus introduced the heliocentric model in his seminal work *De Revolutionibus Orbium Coelestium (On the Revolution of Celestial Bodies)*, published shortly before his death in 1543.

Copernicus might not have published this work if it wasn't for the contributions of previous generations of astronomers. Those covered in the talk included Abu Abdullah al-Battani (868 - 929), Nicole Oresme (1320 - 1382), Nicholas of Kues (1401 - 1464), Georg von Peurbach (1423 - 1461), Johannes Müller (1436 - 1476), and Georg Joachim (1514 - 1574). Mike ended by briefly covering the important works after Copernicus by scientists like Tycho Brahe, Johannes Kepler, Galileo Galilei, and (of course) Isaac Newton.

Jack gave his monthly president's report after the snack break. The Kalamazoo Amateur Radio Club (of which Jack is also a member) will host a presentation on radio astronomy at their regular meeting on April 15th. The meeting will begin at 8:00 pm at the Red Cross Chapel House. Jack then let news leak out that Richard Bell was trying raise funds to have retired NASA astronaut Story Musgrave appear at Astronomy Day 2010 on April 24th. (Fortunately the grant came through and it'll likely be the coolest thing ever!) Lastly, Jack presented Paul Asmus with a member recognition award. Paul attended his first KAS meeting 30 years ago.

Many members in attendance we're still in shock. We just completed a 5 day streak of clear days and nights! That's hard to pull off in the summer let alone the tail end of winter. One upcoming event mentioned was the field trip to see *Hubble 3D* on May 8th. The meeting concluded at 9:16 pm.



Board Meeting Minutes

The KAS Board met on March 14, 2010 at Sunnyside Church. President Jack Price called the meeting to order at 5:05 pm. Present were Richard Bell, Jean DeMott, Dick Gillespie, Jason Hanflik, Don Stilwell, and Roger Williams. In the absence of Rich Mather, no treasurer's report was received.

In the category of old business, Richard reported that membership list had been pruned and brought up to date with current renewals.

Regarding new business, April 17th was shaping up to be a busy day, with Free Admission Day (and Public Observing Session) at Kalamazoo Nature Center, a lecture by Richard at the Parchment Library at 1:30 pm, and a star party at Kingman Museum. Astronomy Day plans for the following Saturday, April 24th, still await response to a grant application that would allow us to bring in Story Musgrave as keynote speaker. (UPDATE: We were successful; see page 3 for the full AD2K10 schedule.) Volunteers are very much needed for both April 17th and April 24th. Richard suggested that in addition to the usual publicity efforts, we could explore asking the Grand Rapids IMAX Theater to hand out fliers on the opening day of the new *Hubble 3D* movie, perhaps with a reciprocal arrangement of distributing IMAX publicity at our Astronomy Day. The biggest single hurdle at the moment was locating 8 oz. tomato sauce cans, which unfortunately few KAS members seem to have been using.

Programming for the coming months was summarized, including Will Millar in April, Robert Miller in May, Gadget Night in July, picnic in August, and Astrophotography Night in October. Some slots remain to be filled. Jack reported on a proposal from Bill Nigg to do a presentation on binocular astronomy. The suggestion was made that this could be a good outdoor presentation at the KNC amphitheater on picnic day, and Jack agreed to check this idea with Bill.

In further business, Dick suggested that the Board should get regular reports from the Robotic Telescope Task Force. He further suggested that the Board get copies of documents being generated in this process to avoid delays in final acceptance. A motion was passed (with an objection by Richard) to make reports from the task force a regular agenda item and to copy the Board on all documents. Don volunteered to e-mail a copy of the latest draft to the Board. On another topic, Jean reminded everyone that next year would be the 75th anniversary of the organization, and we should be thinking about some form of celebration. Jean also reported the good news that the last round of the Perpetual Plant Sale has generated \$550, which will be donated to the KAS Land Acquisition Fund and matched by Pfizer.

The meeting was adjourned at 6:20 pm. The date of the next meeting was set as April 11th.

Respectfully submitted by Roger Williams



Astronomy Day 2010

Give us the day and we'll give you the universe

Saturday, April 24th

KALAMAZOO VALLEY MUSEUM

10 AM - 4 PM | 230 N. ROSE ST.

Solar Observing

View our star close up with safe solar filters (weather permitting).

Displays

Learn about the Hubble Space Telescope, the Sun, and the different types of amateur telescopes. Check out the best astrophotography by members of the Kalamazoo Astronomical Society.

Hands-on Activities

Build a model of the Hubble Space Telescope or make your own Sundial, Star Finder and more.

The Stargazer's Apprentice

Through song, story, games and puppetry, Mike Francis passes the secrets of the heavens on to young stargazers. Ideal for children in grades K - 3. *Showtimes are 11am and 3pm.*

Free Planetarium Shows

Showtimes are 1pm, 2pm and 3pm. See our website for details.

Meet Story Musgrave

Chat with Story and get his autograph from 1 - 4 pm. Copies of his biography, *Story: The Way of the Water*, will be available for purchase.



FETZER CENTER

7:00 PM | WESTERN MICHIGAN UNIVERSITY

Keynote Presentation by Story Musgrave

Story will relive his 35 years of experience with the Hubble Space Telescope. Join us for dramatic recollections of his personal experiences with Hubble and the lessons of life he learned along the way. The story will be told not just in words but rich in multimedia, visuals and sounds. Story is a dynamic, not to be missed speaker. **Admission is FREE but you must obtain a pass at the museum starting on the day of the event at 11am.** Seating begins at 6:30 pm.

Observe the Moon, Venus, Saturn and more after the talk.

Spectacular Spiral

by Tom Koonce



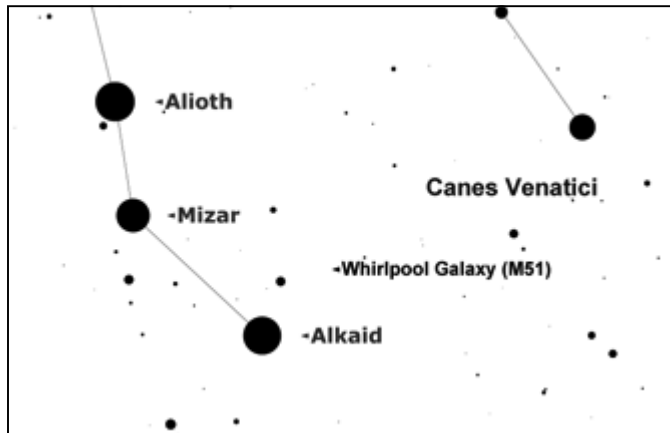
Every year around mid-April the Whirlpool Galaxy is well placed for observation in the northern sky in Canes Venatici (The Hunting Dogs). The Whirlpool is also known as M51 and NGC 5194, but most people know it by the nickname that is obvious after your first view. It has a smaller, yellowish companion galaxy, NGC 5195, in the distance. The Whirlpool is the best spiral galaxy in the sky, in my opinion. It can be seen with a small telescope, the spiral arms detected in an 8" scope, and when it is viewed through a really large telescope it is a stunning sight that you'll never forget. It's always a star party favorite when it's visible higher in the sky. A friend once let me observed it through his 51" reflector and I could hardly tear myself away from the view after 15 minutes. I thought I had only been at the eyepiece for 30 seconds...

You will find it quickly by following the curved handle of the Big Dipper away from the Dipper to the star Alkaid at the end of the handle. Then look 2° (outer ring of your Telrad) lower to the south and west in declination at about a 90° angle to the handle of the Dipper. Scan around the area at low powers and you'll spot it as a fuzzy patch of gray.

The more magnification that you apply to the view, the more of the galaxy's structure will be revealed. Under clear, dark skies you will easily be able to make out the spiral structure of the two tightly wound spiral arms, dust lanes and the illusion of a connecting bridge of material between the two galaxies that is not actually there, at least to the extent that it looks like through the eyepiece. The two galaxies interacted about 70 million years ago, with M51 coming out the winner, gaining mass and kick starting many regions of active star



The Whirlpool Galaxy (M51) is a sprawling city of stars 26.8 million light-years away. It's about 87,000 light-years in diameter - a bit smaller than the Milky Way - but only contains 10% of the mass. This image was taken by the Hubble Space Telescope in January 2005.



M51 is located about 3.5° southwest of Alkaid, the star at the end of the handle of the Big Dipper.

formation. While it certainly would have been an exciting (bad?) time to be living in the Whirlpool Galaxy, the result today is a spectacular face-on spiral galaxy just 31 million light-years away from us with plenty of interesting details, such as the pinkish knots of star forming regions and the radial wisps of interactions between the spiral arms. At medium power, sharp observers may be able to spot another much smaller edge-on galaxy, NGC 5229, to the northwest in the same field of view.

There are a few tricks to observing the Whirlpool Galaxy and other 'faint fuzzies' like it. Obviously clear, dark skies and steady seeing are important. Filters will not enhance your views of galaxies, since galaxies are composed of stars emitting at all frequencies, filtering the view down to a particular band of frequencies will not increase the contrast of the view, like looking at the Ring Nebula with an OIII filter. The best way to visually observe extended, dim, magnitude 8.4 objects like the Whirlpool is to increase the amount of light getting to your eye... thus "bigger aperture is better." Please be careful when viewing awesome deep sky objects like M51 through really big telescopes, as it has been known to lead to serious infections of "Aperture Fever" in some observers. Sadly, there is no known cure for it and no known health insurance plans cover the cost of treatment. Trips to the Texas Star Party, Winter Star Party and other major deep sky events where big telescopes are present only offer temporary relief.

Now that the weather is warming up once again, take some time in April to get to know the spectacular Whirlpool Galaxy, either for the first time or perhaps visit your old friend and study it in new detail.

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



Deadly Planets

by Patrick L. Barry & Dr. Tony Phillips

About 900 light-years from here is a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

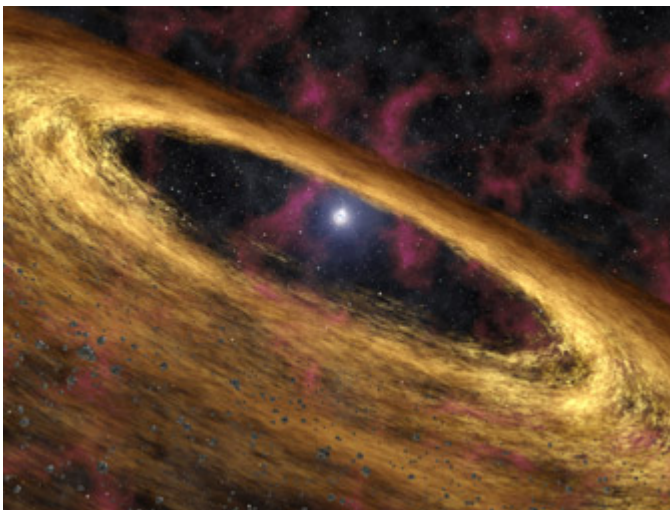
Interested? Don't be. Going there would be the last thing you ever do.

The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles.

"It would be like trying to live next to Chernobyl," says Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.

Our own Sun emits small amounts of pulsar-like X-rays and high energy particles, but the amount of such radiation coming from a pulsar is "orders of magnitude more," he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet's atmosphere, and even vaporize sand right off the planet's surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico's giant Arecibo radio telescope. At first, no one believed worlds could form around pulsars — it was too bizarre. Supernovas were supposed to destroy planets, not create them. Where did these worlds come from?



Artist's concept of a pulsar and surrounding disk of rubble called a "fallback" disk, out of which new planets could form.



Pulsar planets would be paradise for lovers of aurora. However, those that like sandy beaches would be very disappointed.

NASA's Spitzer Space Telescope may have found the solution. In 2005, a group of astronomers led by Deepto Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets' surfaces could be ionized by the incoming radiation, creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by radiation particles as they curve in the pulsar's strong magnetic field.

Wasted beauty? Maybe. Beichman points out the positive: "It's an awful place to try and form planets, but if you can do it there, you can do it anywhere."

Find more news and images from Spitzer at:

<http://www.spitzer.caltech.edu/>

In addition, The Space Place Web site features several games related to Spitzer and infrared astronomy, as well as a storybook about a girl who dreamed of finding another Earth. Go to:

<http://tiny.cc/lucy208>

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

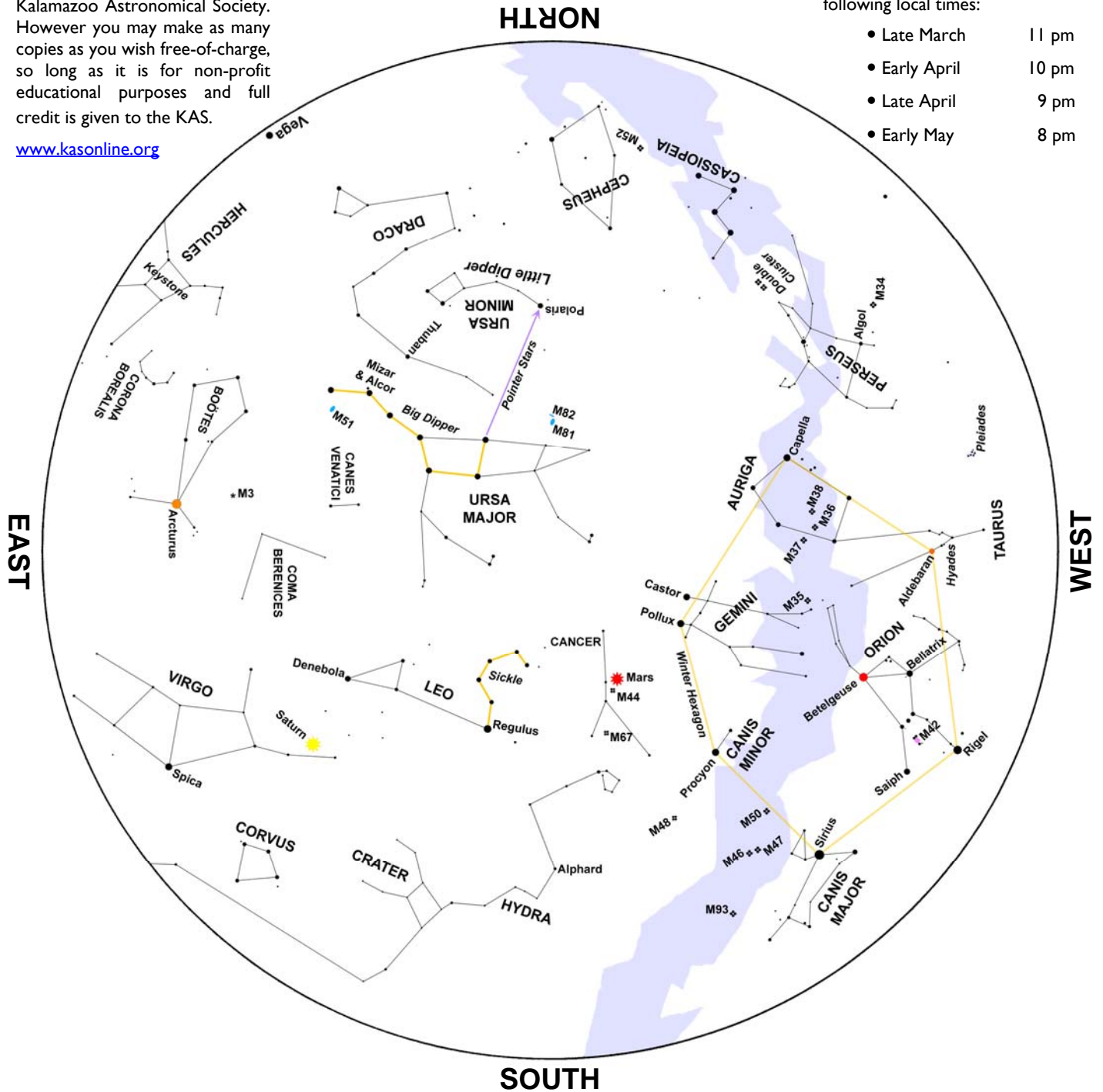
April Night Sky.....

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 times:

- Late March 11 pm
- Early April 10 pm
- Late April 9 pm
- Early May 8 pm



Mars glides above the Beehive Cluster (M44) in Cancer in mid-April. They'll be visible in a 2° field-of-view between April 13th & 20th; well within range of binoculars and rich-field telescopes. Mars will be due north of the cluster on the night of April 15th/16th.

A very thin Waxing Crescent Moon will be about 1° to the upper right of Mercury on April 15th. The Moon/Mercury pair will be 7° to the lower right of Venus. This viewing challenge requires an unobstructed western horizon. Start your search 30 minutes

after sunset. The Moon will be 8° above Venus on April 16th.

International Astronomy Day is on April 24th. Celebrate by looking for the Waxing Gibbous Moon to the right of the ring-planet Saturn.

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April 2010

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KINGMAN MUSEUM ☆ Star Party



Join Kingman Museum for a star party in celebration of Astronomy month. Telescopes will be setup in the Arboretum for observations of the moon, planets, far off galaxies, and more! KAS members from the Battle Creek area are needed to setup telescopes. Don't forget, we also have a Public Observing Session at the Nature Center at the same time.

Saturday, April 17th | 8 - 10 pm

A Brief Introduction to Amateur Astronomy



The Parchment Community Library (located at 401 S. Riverview Drive) will hold a variety of activities from 1 - 4 pm on April 17th as part of "Family Saturday @ the Library". One of the featured presentations will be a "crash course" on how to turn yourself into a star-hopping skymaster. The presentation, given by Richard Bell, will cover everything from star maps, to binoculars, to selecting a telescope. Admission is free and no registration is required.

Saturday, April 17th | 1:30 pm

☆ **OBSERVE** the **UNIVERSE** ☆

APRIL STARGAZING DATES

Kalamazoo Nature Center • 7000 N. Westnedge Ave.

Saturday, April 10 @ 8:00 pm
Saturn & Orion Nebula

Saturday, April 17 @ 8:00 pm
Saturn & Open Clusters of Auriga



with the **Kalamazoo Astronomical Society**

General Meeting Preview



THE DEATH OF STARS, THE STUFF OF LIFE

presented by **Will Millar**

Professor of Astronomy, Grand Rapids Community College

Carl Sagan said it best: "We are made of star stuff". Stars are born, live their lives and die. The most massive stars die in cataclysmic explosions called supernova. During this process they spread their newly-made elements across the Galaxy where they're later used in a new generation of stars. The Sun, its planets, and YOU are made from recycled star stuff. Join us as Will Millar talks about the death stages of medium and high mass stars and how these end stages create the chemical elements used to make living organisms.

Friday, April 9 @ 7:00 pm

*Kalamazoo Area Math & Science Center
600 West Vine, Suite 400 • Use Dutton St. Entrance*

Kalamazoo Astronomical Society
c/o KAMSC
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Kalamazoo, MI 49008

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