Highlights of the February Sky. . .

- - - 2nd - - -
First Quarter Moon

- - - 3rd - - -
PM: Moon passes through northern edge of Pleiades.

- - - 9th - - -
Full Moon

- - - 10th - - -
PM: Moon is about 8° to the upper-right of Saturn.

- - - 11th - - -
PM: The Moon is about 10° below Saturn.

- - - 16th - - -
Last Quarter Moon

- - - 17th - - -
Dawn: Mars is 0.6° south of Jupiter very low in SE.

- - - 22nd - - -
Dawn: A very thin crescent Moon is about 6° to upper right of Jupiter. Mercury is between them.

- - - 23rd - - -
Dawn: Mars is 3° or 4° to lower left of Jupiter and Mercury, with a thin crescent Moon to its lower left.

- - - 24th - - -
Dawn: Mercury and Jupiter are less than 1° apart very low in the east.

- - - 24th - - -
New Moon

- - - 25th - - -
AM: The largest asteroid, Ceres, is 1.58320 AU from Earth. It won't be closer until the year 4164!

- - - 27th - - -
PM: Thin crescent Moon is 1.5° to the lower-left of Venus.

Prime Focus

A Publication of the Kalamazoo Astronomical Society

☆ ☆ ☆ February 2009 ☆ ☆ ☆

This Months KAS Events

General Meeting: Friday, February 6 @ 7:00 pm
Kalamazoo Area Math & Science Center - See Page 8 for Details

Image Unveiling: Saturday, February 21 @ 1:00 pm
Kalamazoo Nature Center - See Page 3 for Details

Observing Session: Saturday, February 21 @ 7:00 pm
February Freeze Out - Kalamazoo Nature Center

Full Moon Theater: Saturday, February 28 @ 7:00 pm
WMU Main Campus, Rood Hall, Room 1110 - See Page 3 for Details

Inside the Newsletter. . .

January Meeting Minutes

The general meeting of the Kalamazoo Astronomical Society was brought to order by President Jack Price on Friday, January 16, 2009 at 7:20 pm EST. The meeting was originally scheduled for January 9th, but had to be postponed due to hazardous winter weather. Approximately 30 members and guests were in attendance at the Kalamazoo Area Math & Science Center (KAMSC).

The featured speaker of the evening was Richard Bell. He began by officially welcoming everyone in attendance to the International Year of Astronomy. His presentation was called *The 99 Years That Changed Astronomy*. The story began with the death of Nicolaus Copernicus in 1543, but Richard started with the philosophers of ancient Greece, Plato and Aristotle. Using *first principles*, they deduced that Earth was the immobile center of the universe with all objects revolving about it in perfect circles. Claudius Ptolemy revised the model about five centuries later with his geocentric model of the universe.

This model stood until Copernicus published his heliocentric model of the universe shortly before his death. Thus began the Copernican Revolution. Richard then discussed the life and work of Tycho Brahe, the greatest observational astronomer of his time. Tycho hired Johannes Kepler to help explain his peculiar model of the heavens. Tycho died unexpectedly, but Kepler used his long series of naked-eye observations to discover his three laws of planetary motion.

Richard then moved on to Galileo Galilei, the founder of telescopic astronomy (400 years ago) and modern physics. Galileo's telescopes helped changed our view of the universe forever. His observations of the Moon in 1609 proved it was another imperfect world like the Earth. The discovery of the Galilean moons of Jupiter in January 1610 proved that all motion wasn't centered on the Earth. The phases of Venus clearly demonstrated that it revolved around the Sun and not the Earth. Richard also naturally discussed Galileo's issues with Catholic Church and the Inquisition. Galileo died in January 1642, which brought an end to the 99 years that changed astronomy, but laid the groundwork for the greatest scientist *ever*, Isaac Newton.

Jack gave a brief president's report after the snack break and then asked for any observing reports. Several members saw brilliant Venus in the evening sky before the meeting. Mike Sinclair reported an incredible sundog the morning before the meeting. Greg Sirna mentioned the announcement of the confirmation of methane on Mars. The February launch of the space shuttle *Discovery* (headed to the International Space Station) was also brought up. The meeting concluded at about 9:15 pm.

Board Meeting Minutes

The KAS Board met on January 11th at Sunnyside Church. President Jack Price called the meeting to order at 5:30 pm. Present were Richard Bell, Jean DeMott, Dick Gillespie, Rich Mather, Mike Sinclair, and Roger Williams.

Rich presented a treasurer's report showing total assets of $15,920.17. Three Community Credit Union CD's had come due, and Rich had switched to CD's at First Federal to get a higher interest rate. One of these was set to come due on January 15th, and the Board decided that the receipts ($1,007.93) should be held as cash, at least until after Astronomy Day. Rich also reported that the online PayPal transactions are revving up, with about $201 so far.

Richard reported that the 2009 General Meeting schedule was all set, and we hope for better luck on the others than in January, where weather necessitated a 1-week postponement. Richard had the programs in hand for Full Moon Theater on January 24th and February 28th. Mike noted that construction will be done on Old Central from June 13th until early September. The July meeting will likely be affected, so alternate locations may have to be considered. The September meeting may also be affected if construction delays pop-up. During this time, the Dutton Street entrance will be closed, and we will need guides (or signage) to show people the access route from the Vine Street entrance.

In the category of Old Business, Richard had not received a response from the Air Zoo or Kalamazoo Valley Museum regarding co-sponsorship of Astronomy Day. Further efforts will be made. In response to questions about the spring star party at Battle Creek Kiwanis Conservation Area, Dick said that they have everything in place, and we don't have to do anything but show up.

New Business focused on unveiling of the M101 photographs from NASA at the Nature Center on February 21st. Richard has been asked to talk briefly on galaxies. Richard had also found a web site offering postcards made up with your choice of picture for $27 per 100 cards. The Board agreed that this would be a good way to publicize the event.

Jack reported that Dan Morgan had decided that his current schedule didn't allow adequate time to serve on the Board, and that he was therefore declining the position. The consensus was that we should see whether runner-up Dave Woolf would accept the job.

The meeting was adjourned at 6:38 pm. The next meeting was set for February 8, 2009, 5:00 pm, at Sunnyside.

Respectfully submitted by Roger Williams

Great Observatories Image Unveiling

Saturday, February 21, 1-3 pm

Kalamazoo Nature Center

You're invited to a special International Year of Astronomy event on February 21st. In collaboration with the KAS, the Nature Center has been selected to permanently display two large multi-wavelength portraits of the spiral galaxy Messier 101 (M101). The images were obtained by NASA's three "Great Observatories" - the Hubble Space Telescope, Spitzer Space Telescope, and the Chandra X-ray Observatory.

One portrait, 3×3 feet in size, will display the combined Hubble-Spitzer-Chandra images. The other portrait, 3×6 feet size, will be a triptych that displays the three high-resolution images from the great orbiting observatories side by side and with description captions below.

In addition to the unveiling, the KAS and KNC will host an afternoon of educational and entertaining activities for the whole family. KAS Member Richard Bell will give a talk called "What is a Galaxy?" Children in attendance will be able to build their own model of the Hubble Space Telescope to take home (two volunteers are needed to run the hands-on table). Visitors will be able to learn about the solar system and there will be snacks for everyone.

The Nature Center has waived their regular admission fee for this event so everyone can witness the unveiling. This is a great opportunity to bring someone new to the Nature Center and to learn more about the KAS.

Join us for our next

Full Moon Theater

Saturday, February 28 @ 7:00 pm

WMU Main Campus - Rood Hall - Room 1110

Do the winter months got you down? Looking for a little astronomical entertainment? Then join us for the next Full Moon Theater. The KAS will provide the popcorn and all the soft drinks. You just need to show up and have a great time!

Our feature presentation...

The Journey to Palomar

The Journey to Palomar is the story of George Ellery Hale's epic quest to unravel the secrets of the cosmos, culminating with the construction in the 1930s and '40s of his million-pound "Glass Giant" of Palomar - the Hale 200-inch Telescope. This award-winning film traces Hale's efforts to build the biggest telescopes in the world, four times over, while battling tycoons, technology, professional rivals and his own personal demons to produce the greatest discoveries since Galileo and Copernicus. The film features the nation's top historians, astronomers and authors combined with never-before-seen archival footage and breathtaking images of the cosmos.

Directions to Rood Hall

Head north up the Howard Street hill from the intersection of Howard and Stadium Drive. Turn right onto W. Michigan Ave. and then go left at the round-a-bout. Turn right into the parking lot. Parking is perfectly safe and free after 6:00 pm on Fridays. Rood Hall is located just past Everett Tower. For further directions please visit KAS Online.

Severe Space Weather

by Dr. Tony Phillips

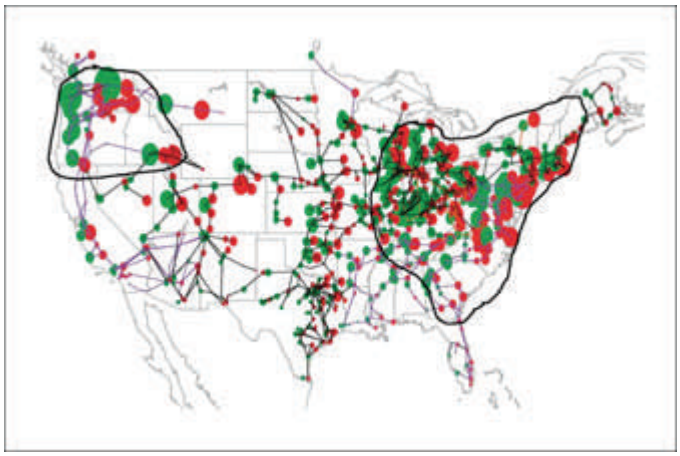
Did you know a solar flare can make your toilet stop working?

That's the surprising conclusion of a NASA-funded study by the National Academy of Sciences entitled *Severe Space Weather Events — Understanding Societal and Economic Impacts*. In the 132-page report, experts detailed what might happen to our modern, high-tech society in the event of a "super solar flare" followed by an extreme geomagnetic storm. They found that almost nothing is immune from space weather — not even the water in your bathroom.

The problem begins with the electric power grid. Ground currents induced during an extreme geomagnetic storm can melt the copper windings of huge, multi-ton transformers at the heart of power distribution systems. Because modern power grids are interconnected, a cascade of failures could sweep across the country, rapidly cutting power to tens or even hundreds of millions of people.

According to the report, this loss of electricity would have a ripple effect with "water distribution affected within several hours; perishable foods and medications lost in 12-24 hours; loss of heating/air conditioning, sewage disposal, phone service, fuel re-supply and so on."

"The concept of interdependency," the report notes, "is evident in the unavailability of water due to long-term outage of electric power — and the inability to restart an electric generator without water on site."



On this power-grid map of the United States, the black-circled areas are regions especially vulnerable to collapse during an extreme geomagnetic storm. Inside those boundaries are more than 130 million people. Credit: National Academy of Sciences report on severe space weather.

It takes a very strong geomagnetic storm to cause problems on this scale — the type of storm that comes along only every century or so. A point of reference is the "Carrington Event" of August-September 1859, named after British amateur astronomer Richard Carrington who witnessed the instigating solar flare with his unaided eye while he was projecting an image of the Sun on a white screen.

Geomagnetic storms triggered by the flare electrified telegraph lines, shocking technicians and setting their telegraph papers on fire; Northern Lights spread as far south as Cuba and Hawaii; auroras over the Rocky Mountains were so bright, the glow woke campers who began preparing breakfast because they thought it was morning!

"A contemporary repetition of the Carrington Event would cause … extensive social and economic disruptions," the report warns. Widespread failures could include telecommunications, GPS navigation, banking and finance, and transportation. The total economic impact in the first year alone could reach $2 trillion (some 20 times greater than the costs of Hurricane Katrina).

The report concluded with a call for infrastructure designed to better withstand geomagnetic disturbances and improvements in space weather forecasting. Indeed, no one knows when the next super solar storm will erupt. It could be 100 years away or just 100 days. It's something to think about … the next time you flush.

One of the jobs of the Geostationary Operational Environmental Satellites (GOES) and the Polar-orbiting Operational Environmental Satellites (POES) operated by NOAA is to keep an eye on space weather and provide early warning of solar events that could cause trouble for Earth.

You can keep an eye on space weather yourself at the National Weather Service's Space Weather Prediction Center:

http://www.swpc.noaa.gov/

And for young people, space weather is explained and illustrated simply and clearly at the SciJinks Weather Laboratory:

http://scijinks.gov/weather/howwhy/spaceweather/

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

Star Parties in 2009

Pack your bags, collimate your scope, and clean those eyepieces! It's time to hit the road and attend a star party (or two). Listed below are all the major star parties (that we know of) that have already announced their dates for 2009. Registration deadlines for each star party may be different (or even passed), so please visit their web sites for the latest information.

If you plan to attend any of the events listed (or not listed) here then let us know. Maybe other KAS members would like to attend. Plus, if you do attend any star parties this year, please consider writing a report for *Prime Focus*. Clear Skies!

Winter Star Party
February 21 – 28
http://www.scas.org/wsp.html

Northeast Astronomy Forum & Telescope Show (NEAF)
April 18 – 19
http://www.rocklandastronomy.com/neaf.htm

Texas Star Party
April 19 – 26
http://www.texasstarparty.org/

RTMC Astronomy Expo
May 22 – 25
http://www.rtmcastronomyexpo.org/

Apollo Rendezvous
June 12 – 13
http://mvas.org/node/29

Grand Canyon Star Party
June 13 – 20
http://www.tucsonastronomy.org/gcsp.html

Rocky Mountain Star Stare
June 17 – 21
http://www.rmss.org/

Cherry Springs Star Party
June 18 – 21
http://www.cherrysprings.org/

Stargazing Manitoulin
July 17 – 21
http://www.gordonspark.com/astronomy.html

Nebraska Star Party
July 19 – 24
http://www.nebraskastarparty.org/

Table Mountain Star Party
July 23 – 25
http://www.tmspa.com/

Stellafane
August 13 – 16
http://stellafane.org/

Manitoulin Star Party
August 14 - 18
http://www.gordonspark.com/astronomy.html

Starfest
August 20 – 23
http://www.nyaa.ca/starfest.htm

Weekend Under the Stars
August 20 – 22
http://home.bresnan.net/~curranm/wuts.html

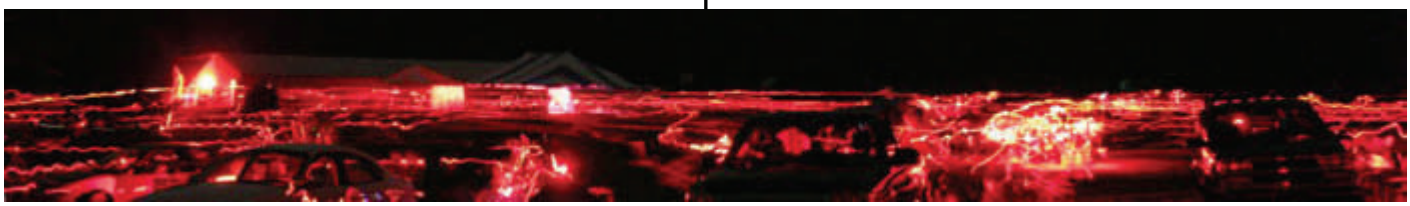
Okie-Tex Star Party
September 12 – 20
http://www.okie-tex.com/

Prairie Skies Star Party
September 17 – 20
http://www.prairieskies.org/

Hidden Hallow Star Party
September 18 – 20
http://www.wro.org/hiddenhollowinfo.html

Eldorado Star Party
October 12 – 18
http://www.texasstarparty.org/eldorado.html

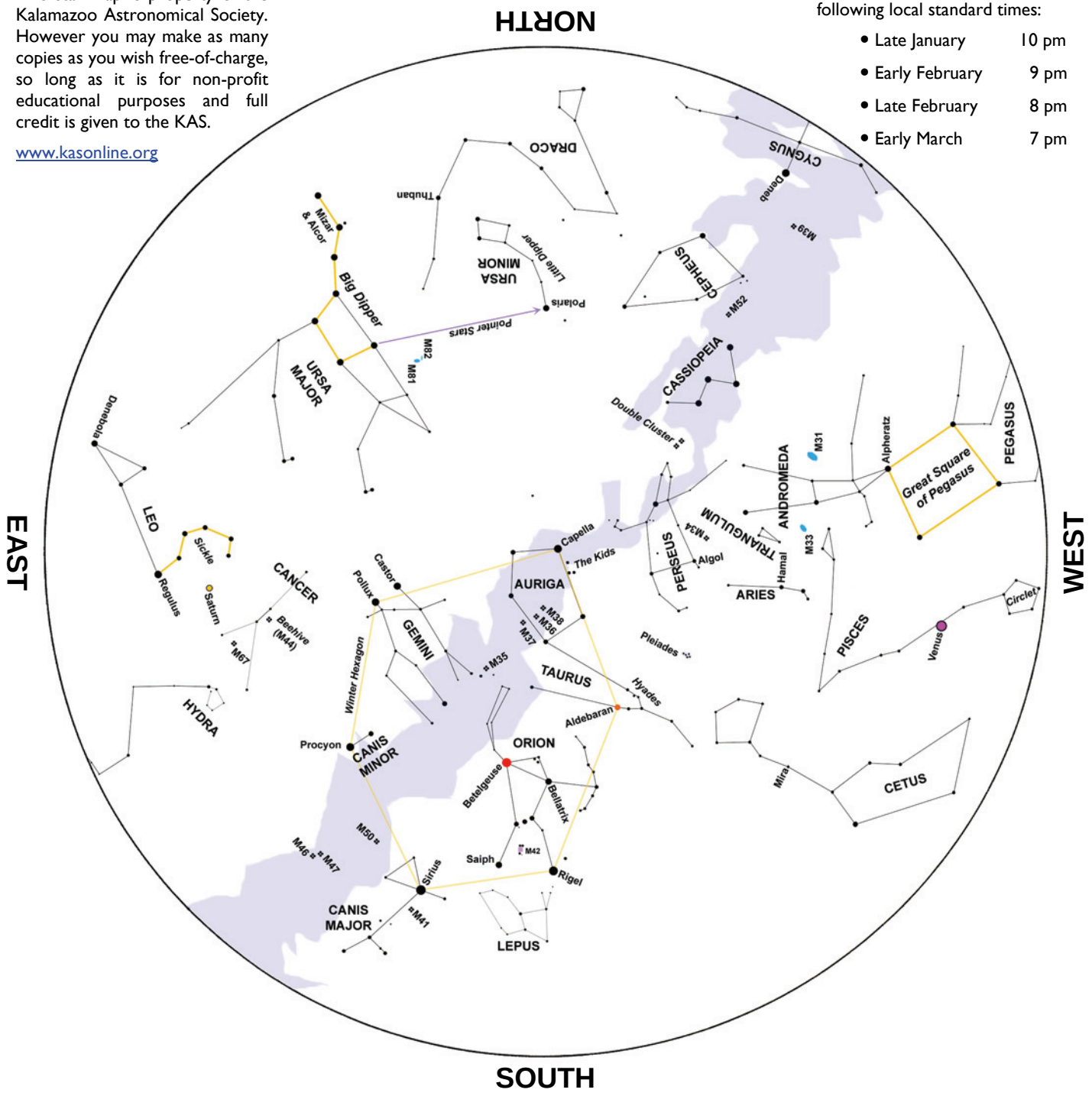
Illinois Dark Skies Star Party
October 15 – 18
http://www.sas-sky.org/



February Night Sky.....

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

- Late January 10 pm
- Early February 9 pm
- Late February 8 pm
- Early March 7 pm



Lady Luna occults the northern edge of the Seven Sisters (the Pleiades) on February 3rd. The occultation begins shortly before 9:00 pm EST. Taygeta is the first star to disappear behind the Moon's disk. Next to vanish are Sterope and 22 Tauri. The entire affair is over by about 10:30 pm.

The largest asteroid, Ceres, will be 1.58320 AU from the Earth on February 25th. It hasn't been that close since 1857 and won't be again until the year 4164! The large round 6.37 magnitude rock can be located about 1.5º SW of 54 Leonis.

Another photogenic conjunction of a Waxing Crescent Moon and Venus takes place on February 27th. They'll be about 1.5º apart.

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February Freeze Out

Winter nights can be ideal for observing. When it's actually clear during a winter night in Michigan, the sky can be unbelievably transparent. So, why don't amateur astronomers turn out in droves to winter observing sessions? It's because it gets *REALLY, REALLY COLD* on a clear winter night! Now comes the time of year when the hardcore members of the KAS brave the frigid temperatures to enjoy the deep sky delights that most people probably miss because of the frigid conditions.

Saturday, February 21 @ 7:00 pm
Kalamazoo Nature Center

Kalamazoo Valley Museum

Planetarium Show Schedule

In My Backyard
Saturdays, 11:00 am; Sundays, 1:30 pm

Orion Nights
Wednesdays 3:00 pm; Saturdays, 2:00 pm

Hubble Vision
Saturdays & Sundays, 3:00 pm

*Planetarium admission is $3.00 per person. The Kalamazoo Valley Museum is located at **230 North Rose Street** in downtown Kalamazoo. For more information please call (269) 373-7990 or visit us on the web at www.kalamazoomuseum.org*

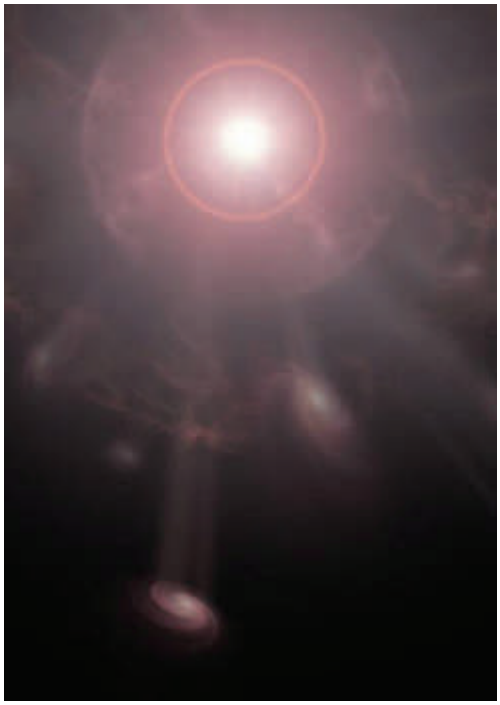
The Miller PLANISPHERE

The Miller Planisphere is made with heavy duty plastic and includes a durable plastic case. All planispheres sold by the KAS are 10.5" in diameter and set at 40° latitude. Just dial the date and time and you'll see what's in the sky for that moment. All proceeds go toward the programs of the Kalamazoo Astronomical Society. Available for purchase at most meetings and observing sessions. Also available online at : skyshop.kasonline.org

Only $13.00

General Meeting Preview

Misconceptions *of the* BIG BANG



Presented by **Dr. Kirk Korista**
Professor of Astronomy, Western Michigan University

During an interview with BBC radio in 1949 for the show, *The Nature of Things*, noted English astrophysicist Sir Fred Hoyle coined the term "big bang" to describe an emerging scientific model that arose from the observations of Hubble and others of galaxy recession and the theoretical work of Friedmann, Lemaitre, Robertson, and Walker, whose exact solutions to the field equations of Einstein's General Relativity Theory provided the framework to understand those observations. The moniker stuck. While he introduced the term to help his radio audience understand this model (which he opposed), history has shown that the very name of this now well-established theory of the evolution of our universe has helped to sow confusion in the minds of non-specialists who hope to understand it. As inspired by a March 2005 *Scientific American* magazine article of the same name, Dr. Korista will discuss a subset of the many misconceptions of the "Big Bang Theory", and hopefully help lay some of them to rest.

Friday, February 6 @ 7:00 pm

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

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

STAMP