



# Focal Point



August, 2014

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## MAS Membership Renewal

Just like last year the Membership Renewal Notice will be sent out via email. Recently, the Renewal Form was integrated into the MAS website with different payment options including Credit Card, PayPal, Money transfer or Check made payable to The Milwaukee Astronomical Society.

Open the For Members menu on the MAS website and scroll down to the Renew Membership tab on the left side, or just follow this link: <http://www.milwaukeeastro.org/sendmsg/onlineRenew.asp>.

Please renew your membership soon.

If you joined the MAS after January 1<sup>st</sup>, 2014 your membership is active till the 2015 renewal period.

## Next Public Night on August 22<sup>nd</sup>

The fourth public observing night is scheduled for August 22<sup>nd</sup> at 7:30PM. The topic will be **The Wonders of Nebulae**. The evening will include a presentation about the topic by Dennis Roscoe and viewing thru telescopes weather permitting. We will collect a parking donation of \$5/vehicle. The event will be held in rain, shine, and starlight. The kind help of MAS members during the night is encouraged and highly appreciated.

### 2014 Public Observing Nights

2014 Public Observing Nights		
August 22, 19:30	The Wonders of Nebulae	Dennis Roscoe
September 12, 19:30	Ice Giants: Uranus and Neptune	Lee Keith
October 3, 19:30	The Moon	Brian Ganiere

## The MAS Summer Schedule

There will be no General Membership Meeting in June, July, and August. The September Meeting will be announced in September issue of this newsletter.

The use of the Observatory is not affected by the summer schedule. Remember: Saturday nights are the keyholder nights! See you there.

## Observatory Tour



Maintaining a good relationship with the New Berlin Public Library is part of our public outreach. Recently our Observatory Director, Gene Hanson visited the library and gave a presentation about the MAS and astronomy.

On the Tuesday night of August 5<sup>th</sup>, a group organized by the New Berlin Public Library visited the Observatory. Paul Borchardt and Dan Yanko coordinated this event. They gave presentations about the history of the MAS and basics of astronomy.

The presentations were followed by a tour of Z-dome, where Scott Jamieson introduced the Z-scope and its control room. As usual, people were amazed by the dimensions of that telescope, which was not operational due to the ongoing reconstruction effort.

The sky cleared out somehow unexpectedly so the visitors were able to take a look at Moon, Mars, Saturn and several deep sky objects at the end of the tour.



## Yerkes Summer Institute Party

We had another Yerkes star party under the clouds. As always, MAS has put on a star party for the one week Yerkes Summer Institute at Yerkes Observatory on August 10<sup>th</sup>. The participants are African American high school students from inner city Chicago. An average student stays in the program for three years. Program graduates succeed at a rate that is over five times better than their peers: 100% in college, 54% Science Technology, Engineering & Math majors.

MAS was represented by seven members: Russell Chabot, Henry Gerner, Agnes Keszler, Tamas Kriska, Paul Smith, Sue Timlin, and Lance Traylor accompanied by family members.

The students could not see anything through telescopes, but fortunately this event is not all about showing celestial object to an audience. Technical aspects of astronomy is also of great interest to these students. We had to explain the working principles of our equipment and answer lots of questions.



## In the Astronomical News

### Magnetically Levitating Black Holes

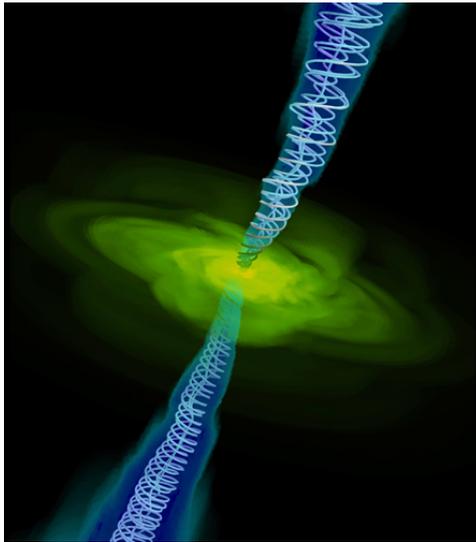
Lurking in the centers of most galaxies, including our own Milky Way, are supermassive black holes: monsters from several hundred thousand to several billion solar masses jammed into a volume equivalent to that of our solar system. Gas or stars drifting too close will find themselves caught in the grip of the powerful gravitational field, trapped in an inexorable death spiral ever faster and tighter down toward the black hole, until voraciously consumed in a last gasp of electromagnetic radiation. Right?

Not so fast. A new study of 76 supermassive black holes, combining analysis of observations with computer simulations, reveals that some galactic behemoths have magnetic fields powerful enough to counteract the enormous pull of their gravity—thereby allowing clouds of gas or other objects at the top of the magnetic fields to levitate temporarily in place above a supermassive black hole.

Of interest are blazars: active galactic nuclei (AGNs) that beam extremely bright, energetic, collimated jets of gas at nearly the speed of light in the direction of the Earth. Such jets—which shoot out along the axis of rotation of a disk of gas accreting around a rotating black hole—emit powerful radiation at radio wavelengths. Only about one in ten AGNs have powerful radio-emitting jets.

From such radio emission independently observed by other astronomers at different frequencies using very long baseline interferometry (VLBI) from a vast network radio telescopes separated by thousands of miles, the authors determined the strengths of magnetic

fields threading through the jets and central black holes of 68 blazars and eight nearby radio galaxies. Included were such famous galaxies as the beautiful spiral Messier 81 in Ursa Major, Centaurus A (the radio galaxy nearest to our Milky Way), and Cygnus A (a famous radio galaxy discovered in 1939 by radio astronomy pioneer Grote Reber).



*A computer simulation shows gas (yellow) falling in the direction of a central black hole (too small to be seen). Twin jets (blue), strongly focused by spiral magnetic field lines, shoot out towards the top and bottom, perpendicular to the plane of the rotating accretion disk. Credit: Alexander Tchekhovskoy / LBNL*

These fields obstruct gas infall, compress the accretion disk vertically, slow down the disk rotation by carrying away its angular momentum in an outflow, and determine the directionality of jets.

Good agreement was found between the predictions of the computer simulations and the measured magnetic field strengths. The simulations revealed that the magnetic fields, which are twisted by the rotation of a supermassive black hole, are strong enough to counteract the pull of gravity and retard the infall of gas. The twist also transfers black hole rotational energy to electromagnetic energy of the jets, which carry it out as far as several light-years away.

Thus, the jet-launching regions of these radio-loud galaxies are threaded by dynamically important [magnetic] fields, which will affect the disk properties.

—Trudy E. Bell, M.A.

The University of California High-Performance AstroComputing Center (UC-HIPACC), based at the University of California, Santa Cruz, is a consortium of nine University of California campuses and three Department of Energy laboratories (Lawrence Berkeley Laboratory, Lawrence Livermore Laboratory, and Los Alamos National Laboratory). UC-HIPACC fosters collaborations among researchers at the various sites by sponsoring an annual advanced International Summer School on AstroComputing (ISSAC), offering travel and other grants, co-sponsoring conferences, and drawing attention to the world-class resources for computational astronomy within the University of California system. More information appears at <http://hipacc.ucsc.edu>.

## Adopt a Telescope Program - Signup Sheet

	<b>Adoptee</b>	<b>Scope</b>	<b>Location</b>
<b>1</b>	Sue Timlin	18" F/4.5 Obsession	Wiesen Observatory
<b>2</b>	Neil Simmons	12.5" F/7.4 Buckstaff	B Dome
<b>3</b>	Russell Chabot	12.5" F/9 Halbach	A Dome (Armfield)
<b>4</b>	Dan Yanko	18" F/4.5 Obsession (Kyle Baron)	Albrecht Observatory
<b>5</b>	Tamas Kriska	25" F/3.4 Zemlock	Z Dome
<b>6</b>	Henry Gerner	12" LX 200	Tangney Observatory
<b>7</b>	Jeffrey Fillian	14" Z-Two scope	Ray Zit Observatory
<b>8</b>	Vacant	10" LX 200	Jim Toeller Observatory

### At Your Service

#### Officers / Staff

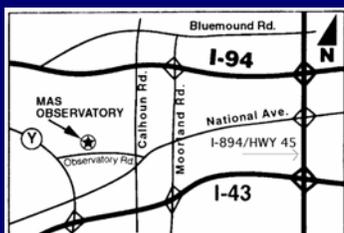
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Dennis Roscoe	608-206-0909
Michael Smiley	262-825-3981
Sue Timlin	414-460-4886
Dan Yanko	262-255-3482

#### August/September Key Holders

8/23	Lee Keith	414-425-2331
8/30	Henry Gerner	414-774-9194
9/6	Tamas Kriska	414-581-3623
9/13	Mike Smiley	262-825-3981
9/20	Tom Schmidtkunz	414-352-1674
9/27	Dan Yanko	262-255-3482



#### MAS Observatory

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