SARA OBSERVATORY NEWSLETTER

Issue #12 *Autumn 2005*

Florida Institute of Technology | University of Georgia | Clemson University
East Tennessee State University | Valdosta State University | Ball State University
Florida International University

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Adam Block obtained this lovely image of vdb 142 with the SARA 0.9-m telescope and Alta U55 camera. (*image by Adam Block).*

From the Editor's Desk

Ken Rumstay (VSU)

As 2005 draws to a close, we look back on some exciting developments for the Southeastern Association for Research in Astronomy. SARA appears to be entering a time of unprecedented growth which may potentially change its character. At the autumn meeting of the Board of Directors a new institution, Ball State University, was admitted to SARA. Located in Muncie, Indiana, our new member is obviously *not* located in the southeastern United States! This will present some difficulties (for example, in placing summer REU students so far from the other schools), but nothing insurmountable I'm sure. The door is presumably now opened for other new members to come from anywhere in the country. Chairman of the Board Terry Oswalt cited the precedent of the Astronomical Society of the Pacific; over time this respected group has expanded far beyond the west coast! For the time being we expect to remain largely a regional association; our next new member will likely be Agnes Scott College, located in Atlanta.

The motivation for seeking new members lies in our desire to expand our observing capabilities. SARA is investigating the possibility of establishing a remotely-operable observing site in the southern hemisphere, most likely at the Cerro Tololo InterAmerican Observatory in Chile. Acquisition and operation of a second telescope will be costly, and will require that SARA grow to nearly twice its current size.

The 0.9-meter telescope at Kitt Peak continues to perform reliably, and is used on every very nearly every clear night. Remote operation is now the norm; very rarely do our astronomers observe on-site. Of course, during the summer the observatory was visited by ten participants (and their mentors) in our REU program, and all obtained useful data. A list of their research projects appears on page four.

I look forward to the coming year, and hope to make the trip out to Kitt Peak again next summer. Each time I'm out there I think, on the last night of my observing run, that this will be the last time I see the Milky Way for a long time! I'm afraid our campus observatory has a rather bright sky.

I wish all our readers the best; please contact us if you have any enquiries regarding SARA. I wonder how many members SARA will have when our next issue appears?

The Autumn 2005 SARA Board Meeting

Ken Rumstay (VSU) and Gary Henson (ETSU)

Twice each year the Board of Directors of SARA meets to chart our course for the next six months. We met most recently on September 23rd at the Florida Institute of Technology. Present were Chairman Terry Oswalt (FIT) and Directors Gary Henson (ETSU), Scott Shaw (UGA), Ken Rumstay (VSU), Matt Wood (FIT), and Jim Webb (FIU). Also present were Ron Kaitchuck and Tom Robertson from Ball State University. Agenda items discussed included:

1) The Observatory Director's report was presented by Jim Webb. The telescope is fully subscribed and works well. A discrepancy between times recorded in the image fits headers of the new Alta U55 camera were noted. For users making time-critical observations (such as Matt Wood during his Whole Earth Telescope campaigns) accurate observation times are essential.
2) The ISTeC (International Small Telescope Consortium) website has been restored. Matt Wood agreed to take charge of its oversight.
3) Stephane Vennes will secede Matt Wood as Florida Tech's representative on the SARA Board of Directors.
4) Ball State University's application to join SARA was unanimously approved. Agnes Scott College will submit an application to join in the very near future. Other possible members, including Florida Atlantic and Northern Kentucky Universities, were discussed.
5) Terry reported on the recent KPNO Tenant's meeting. As funding for smaller optical telescopes continues to diminish, the tenants will probably need to assume a greater share of the burden of operating Kitt Peak.
6) Scenarios by which SARA might obtain access to a southern hemisphere telescope were discussed. We decided to pursue the possibility of retrofitting the Lowell Observatory 0.6-m telescope at Cerro Tololo for remote operation. Our first step will be to send Peter Mack to Chile, probably in late winter, to examine the telescope in order to determine whether this plan is feasible. Funding for this trip was approved. We also discussed again the possibility of joining the SMARTS (Small and Moderate Aperture Research Telescope System) consortium.
7) Telescope time for the period 2005 November to 2006 April was assigned. With the addition of a seventh (and likely an eighth) member, and with charter members having been in SARA for sixteen years, the time has come to consider adopting a new allocation algorithm.
8) Program Director Matt Wood reported on the 2005 REU Program, which by anyone's judgment was highly successful. Our current NSF grant is now completed; Matt Wood will prepare and submit a renewal proposal. He noted that, at nearly $10k per student, our is one of the more expensive astronomy REU programs!

The date for our next meeting has been set for 2006 March 24, on the campus of Ball State University.

The Board considers Ball State University's application to join SARA. We voted unanimously in favor! (*Photo by Ken Rumstay*)

Terry describes SARA's achievements during the past year to FIT administrators during luncheon. (*Photo by Ken Rumstay*)

Proudly displayed in the new Olin Science Building are the three-volume set *The Future of Small Telescopes in the New Millennium*, edited by Terry Oswalt, and the scale model of the SARA 0.9-m telescope built by Jim Webb. (*Photo by Ken Rumstay*)

Ball State University, our Newest Member

Ken Rumstay (VSU) and Ball State University

With admission of Ball State University, SARA's geographical extent has expanded well beyond the confines of the southeastern United States! Located in Muncie, Indiana, a community of roughly 67,000 located sixty miles northeast of Indianapolis, the university began as a private normal school in 1899. The campus and buildings were purchased by the Ball brothers (William, Frank, Edmund, George., and Lucius), the famous Muncie industrialists, and given to the state of Indiana in 1918. The institution became a university in 1965. The 1,035-acre residential campus has 67 buildings, an annual operating budget of $243 million, and about 20,500 graduate and undergraduate students. Ranked a Doctoral/Research-Intensive institution by the Carnegie Foundation; Ball State's seven academic colleges and graduate school offer more than 156 baccalaureate programs, 91 master's programs, and 16 doctoral programs.

The Department of Physics and Astronomy offers major programs in physics and in pre-engineering, and a minor in astronomy. Fully twelve courses in astronomy are offered! Fourteen full-time Ph.D.s comprise the faculty. Housed in the Cooper Science Complex, the department boasts modern, high-tech classrooms and laboratories, and an observatory equipped with several telescopes ranging in size up to sixteen inches. The planetarium seats seventy and is equipped with A Spitz A3P projector, and is used for course instruction and public outreach. Ball State is a member of NURO, the National Undergraduate Research Observatory in Flagstaff, and their astronomy students regularly observe with the 0.8-m reflector there.

There are currently three full-time astronomers on the Ball State faculty. Their research interests lie primarily in the area of observational stellar astronomy, concentrating on binary stars with accretion disks and on galactic structure and kinematics. Drs. Thomas H. Robertson and Thomas M. Jordan are working on the detection of low mass stars using spectroscopic and photometric techniques. In addition to being Director of the campus planetarium and observatory, Dr. Ronald H. Kaitchuck, coauthor (with Arne Hendon) of the classic textbook *Astronomical Photometry*, is an expert in the study of accretion disks around cataclysmic variables. His findings have helped to determine the structure and evolution of accretion disks in these close binary systems. Ball State undergraduate and graduate students are actively involved in these projects.

Despite their northeastern location, Ball State University is clearly a good match for SARA! Their faculty will bring valued skills and experience to the consortium, and we look forward to working with them. As is traditional whenever we've admitted a new member to SARA, our next meeting of the Board of Directors will be held at the new institution. As a fellow planetarium director, I hope to get some pointers from Ron. And, as the meeting is scheduled for mid-March, perhaps we'll even get to enjoy a bit of snow! As a transplanted New Englander, I'd enjoy that!

With the addition of Ball State University to SARA, we finally have a member institution which enjoys a reasonable winter climate! (*Photo courtesy of Ball State University)*

The BSU observatory boast an impressive collection of telescopes for conducting astronomical research and for visual observation. (*Photo courtesy of Ball State University)*

The planetarium seats seventy, and is used for course instruction and public outreach. A series of workshops I planetarium operation and show production is offered by Ron Kaitchuck each summer. (*Photo courtesy of Ball State University*

The 2005 SARA REU Program

Ken Rumstay, VSU

During this past summer SARA operated its eleventh summer Research Experiences for Undergraduates program. Funded by a grant from the National Science Foundation, this program provides an opportunity for qualified undergraduate students to participate in astronomical research. Ten students, selected from a much larger pool of applicants, spent the summer working closely with faculty at the six SARA institutions. This year's participants are listed in the table below, along with their home institutions, SARA schools and mentors, and the titles of their research projects. As the titles evidence, our students engage in a wide variety of projects.

As is traditional, this year's program began with a group meeting of all participants. Held on May 27th and 28th at the Florida Institute of Technology in Melbourne, this gathering was intended primarily as an opportunity for everyone in the program to become acquainted. Students were given a bit of SARA's history, and the mentors briefly described their research programs. There was plenty of time for socializing as well, notably at the Lone Cabbage Fish Camp on Friday night. The airboat ride is a long-standing SARA tradition!

Program participants spent the ensuing nine weeks at their respective SARA school, pursuing their chosen research. Each traveled to Kitt Peak for a four-night observing run with the SARA 0.9-m telescope. This trip continues to be the main highlight of the program for most of ours students, especially those who may have never experienced a truly dark night sky!

A second group meeting was held July 29th and 30th on the campus of the University of Georgia. This gathering provided a venue in which students could share their results. Each individual gave a fifteen minute oral presentation; these were of a highly professional quality! Unlike previous years, we did not require our students to prepare posters this year. The 2005 SARA REU program officially ended on Saturday evening with a dinner party at the home of Scott and Beth Shaw.

We remain in contact with our students, and advise them (and write many letters of recommendation!) as they prepare to apply to graduate school. I hope to see many of them at the January meeting of the American Astronomical Society!

2005 SARA-REU Participants

Name	Home Institution	Faculty Mentor
Gregory M. Azarnia	Florida International University	James R. Webb (FIU)
Noise Characteristics of Microvariations in Blazars		
Tashonia L. Blackwell	Norfolk State University	Matthew A. Wood (FIT)
IRAF vs. Maxim DL: Efficiency Comparison Test		
Adam J. Brimeyer	Iowa State University	Richard Ignace (ETSU)
IR Forbidden Lines from Dense Aspherical Wolf-Rayet Winds		
Laura M. Hachmeister	Valdosta State University	Kenneth S. Rumstay (VSU)
Four-Year Light Curves for Selected Active Galaxies: Part One		
Travis P. McIntyre	Clemson University	J. Scott Shaw (UGA)
Spotty Low Mass Binaries		
Jeremy M. McLaughlin	Radford University	Gary D. Henson (ETSU)
Photometry of Post-AGB Stars		
Isaac M. Silver	Florida Institute of Technology	Matthew A. Wood (FIT)
Nine New Delta Scuti Stars		
Elysse N. Voyer	Villanova University	Kenneth S. Rumstay (VSU)
Four-Year Light Curves for Selected Active Galaxies: Part Two		
Eric S. Watson	University of Nebraska at Kearney	Bradley S. Meyer (CU)
Radioactivities in a Three-Phase ISM Model		
Robert J. Wilkos	Florida Institute of Technology	Terry D. Oswalt (FIT)
NASA Deep Impact Mission Results from the SARA 0.9-m Telescope		
Jeremiah Lant*	Clemson University	Bradley S. Meyer (CU)
Extinct Chlorine-36 in the Solar System		
Anna Manning*	Clemson University	Dieter Hartmann (CU)
Color Imaging of M16, M51, and M82		
Christina Riddle*	Clemson University	Dieter Hartmann (CU)
Host Galaxy Extinction of GRB Afterglows		

*Clemson University non-REU students who participated in the second group meeting.

Matt Wood describes the ACE telescope operating system at the first meeting at Florida Tech. (*Photo by Ken Rumstay)*

Chairman of the Board Terry Oswalt rolls into the Ocean View Diner in this classic Volkswagon Beatle. (*Photo by Ken Rumstay)*

Students enjoy the traditional SARA airboat ride at the Lone Cabbage Fish Camp. (*Photo by Ken Rumstay)*

Elysse and Laura discover the "blue-collar" aspect of astronomy during their observing run at Kitt Peak. (*Photo by Ken Rumstay*)

Participants in the Summer 2005 SARA REU program pose for the camera during a break at the UGA meeting (*Photo by Matt Wood)*

Students presented their results at the second meeting, held on the University of Georgia campus. Eric Watson describes radioactive isotopes in the interstellar medium. (*Photo by Ken Rumstay*)

The Ohio State University Astronomy Reunion

Ken Rumstay (VSU)

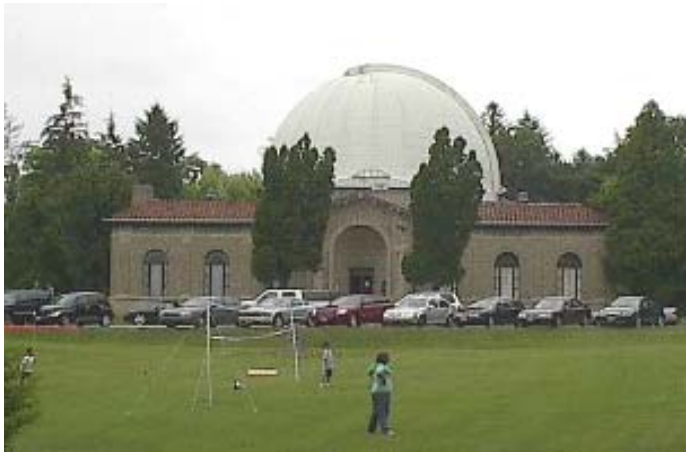
Terry Oswalt and I enjoyed a very pleasant social event in June. Terry received his Ph.D. in astronomy from the Ohio State University in 1981; I followed three years later. For several years we shared an office in the Alpheus Smith Physics Lab which housed the Astronomy Department.

On June 10th and 11th the OSU astronomers hosted a reunion of all departmental alumni. Terry and I attended with our wives, and had a thoroughly enjoyable time. Our hosts arranged a tour of the department on Friday; in the instrumentation lab we saw the spectrograph being built for the new BLT on Mt. Graham. After a Friday evening banquet, on Saturday we enjoyed a picnic at the Perkins Observatory. Thanks to Gerry Newsom, Gene Capriotti, and all others involved in the planning of this wonderful event!

After a morning of presentations during the second meeting, we broke for luncheon at the UGA Center for Continuing Education. But astronomical discussions continued! (*Photo by Ken Rumstay*)

Barb and Terry Oswalt and Sue Ellen Rumstay trade anecdotes with OSU alumnus Richard Talcott (senior editor at Astronomy magazine) at the Friday banquet. (*Photo by Ken Rumstay*).

Music is always an important component of REU meetings! Adam Brimeyer and Jim Webb provide after dinner entertainment at Scott Shaw's house on Saturday night. (*Photo by Ken Rumstay*)



Perkins Observatory, located north of Columbus in Delaware, Ohio, was the venue for a picnic on Saturday afternoon. Terry and I fondly recall observing here! (*Photo by Ken Rumstay*)

News from SARA Institutions
Ken Rumstay (VSU)

As reported in our last issue, the F.W. Olin Physical Sciences Building at Florida Tech has been completed, and the faculty of the Department of Physics and Space Science have moved into their new offices. A 32-inch reflecting telescope has been ordered from DFM Engineering; delivery and installation is scheduled for late spring or early summer of next year. In the meantime, Matt Wood and his students (notably Isaac Silver) have been making CCD observations of variable stars with an 8-inch Meade telescope mounted atop the large pier. We had a chance to observe this system in operation last September after the FIT Board meeting, and were quite impressed with the image quality!

In other news from Florida Tech, Matt Wood has stepped down as that school's representative to the SARA Board of Directors. He will continue as our REU Program Director; Dr. Stephane Vennes will take his place on the Board. Thanks for years of hard work on the Board, Matt!

At Valdosta State University renovation of the south wing of Nevins Hall is finally complete. Seating in the planetarium is now limited to forty-seven, in order to bring the facility into compliance with local fire code (the planetarium has but a single entrance). Public shows are offered free of charge on the first Friday of each month during the fall and spring semesters. Our first show, on September 2nd, coincided with the dedication of the new telescope; about one hundred people attended.

That telescope, a 16-inch reflector manufactured by DFM Engineering, had actually been purchased three years ago with "end of the year" funds. Its installation had to be delayed until the Nevins renovation was completed; finally by late spring we were ready! Mr. Ian Huss from DFM arrived on the evening of June 13th, and work began the following morning. The telescope components had been shipped previously; the crate suffered some damage in transit but fortunately the telescope itself was in perfect condition. The telescope and its fork mounting is very light in weight but extremely rigid; all the pieces could be carried by hand to the dome atop Nevins. Assembly of the telescope required two days; the following two nights were devoted to calibration of the pointing model.

The telescope is controlled by a computer located in a climate-controlled physics lab located on the third floor, immediately beneath the dome. During operation this is slaved to a laptop in the dome itself. As our dome must be turned manually, remote observation is as yet unfeasible. The telescope consistently points to within two arcminutes, and is of superb optical quality. It's also gorgeous to look at; the finish was applied in a commercial auto paint shop!

The VSU telescope will be joined by its "big brother" at FIT in a few month's time. Let us hope that that installation proceeds as flawlessly as did the one at VSU. But with twice the aperture, FIT is going to need a crane!

And, of course, the big news from Ball State University is that they have joined SARA! Welcome aboard guys!

Installation of Florida Tech's new 0.8-meter DFM telescope is scheduled for next spring or early summer. In the meantime, FIT's astronomers are making research-grade observations of variable stars with this 8-inch telescope! (*Photo by Ken Rumstay*)

Mr. Ian Huss of DFM Engineering installed VSU's new 0.4-meter telescope in mid-June. A formal dedication ceremony, with a ribbon cutting and public planetarium show, would be held three months later at the start of fall semester. (*Photo by Martha Leake)*

VSU President Ronald Zaccari addresses visitors at the dedication ceremony on September 2nd . Approximately one hundred visitors were on hand to get a look through the new telescope, and to enjoy a show in the renovated planetarium. (*Photo by Ken Rumstay*)

News from our REU Alumni

Sarah McGregor (Boston University) And Ken Rumstay (VSU)

Time again to bring you news of a former REU student! In the summer of 2002 Ms. Sarah McGregor had just completed her junior year at Saint Michaels College, an undergraduate institution of 1900 students in Colchester, Vermont. She had applied to our summer REU program, and accepted my offer to spend the summer at Valdosta State University, studying active galaxies with me. Four years have passed, and she is now a graduate student at Boston University. While I'll admit to a tinge of regret that she no longer studies AGN's, at the same time I'm delighted that she is excelling in her new field of study! She writes:

"During the summer between my junior and senior years in college, I was accepted to the SARA summer REU program where I was able to work with Ken Rumstay. This led to a poster at the AAS meeting the following January. In that same month, I got engaged and was accepted to Boston University's (BU) graduate program in the Astronomy Department. Overall I think that was a really good month.

"When fall came, I found myself in the fast-paced city life of Boston,, which was quite a change from the small town where I grew up and went to college. I spent my first year at BU as a TA, but with every intention of continuing research in AGN's. That, however, changed after a gas dynamics course with my soon to be advisor. I then found myself on the 'hot' topic of solar physics. Soon I began working for the Center for Integrated Space Weather Modeling (CISM). The goal of this program is to create a physics-based model of the sun-to-Earth environment by linking together the best computational models of the sun, solar wind, magnetosphere, and the ionosphere. Thus CISM is inherently a multi-institutional program, and to help cope with this once a year there is a graduate student retreat. There we are able to discuss everyone's research and learn information that is not usually taught in classes, such as how to get funding or life after graduate school. The picture shown was taken during the 2004 retreat. W. Jeffrey Hughes, my advisor, is in the back.

My work with CISM has focused on validating the MHD solar coronal code MAS (Magnetohydrodynamics Around a Sphere) from SAIC. I've also been working on making improvements to the empirical/physical model (the Wang-Sheeley-Arge model) of the corona and solar wind.

When I'm not busy with my research or studies, I spend time tutoring high school students in Astronomy, play on the department volleyball team, attend book-club meetings, and continue to work out the details for what must be the longest engagement ever.

Members of Boston University's Center for Integrated Space Weather Modeling enjoy their 2004 retreat. Sarah is fourth from right. (*Photo courtesy CISM*).

At a friend's recent wedding, Sarah contemplates that soon she'll be the bride! (*Photo by Sarah McGregor).*

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Kenneth S. Rumstay, Editor

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