VIA STELLARIS

www.vbas.org

The Monthly Newsletter of the Von Braun Astronomical Society

VBAS Highlights for December

Public Programs for December

Because the holidays are such a busy time, we typically don't have a VBAS December Members Meeting. So, our next member's meeting will be held on Friday, January 19th at 7:30 pm. VBAS Member Meetings are held on the 3rd Friday of each month (except December) at 7:30 p.m.; they're open to the public and are free.

Planetarium programs start at 7:30 PM. Admission to planetarium shows is free for VBAS Members, $3.00 for Adults, $2.00 for Children 6-11, and free for children under 6. Observation of the night sky through various telescopes normally follows each planetarium program, weather permitting.

President's Message - A Year in Review

On page 2, Jeff Delmas gives a VBAS Year In Review.

Swanson 21" Progress

Page 3 features Jeff Delmas' progress report about our newly restored big scope, and two pictures of M-42 as seen through the scope, before and after collimation.

Sally Ride Science Festival

On page 4, John Young gives a report about VBAS' role in this first-time event, designed to encourage girls to pursue science and technology.

Dirac Equation Abstract

An abstract of a paper VBAS member David Maker submitted to the American Physical Society is on page 4, along with a link you can follow to read the full paper.

VBAS Member Meeting Minutes

Page 7 has the draft minutes of last month's members meeting, along with a final photo of Bruce Potter's homemade telescope.

Steve Sloan
Via Stellaris Editor
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Deadline for January 2006 Via Stellaris submissions is Friday, January 6.

In This Issue:

President's Message - A Year in Review

As the year draws to a close, I thought it would be good to review the activities and accomplishments our society made during the year. Here are some of the highlights:

- We started the year working on a revised constitution and bylaws. The new constitution and bylaws were approved in March by the board of directors and submitted to the members and approved in May.
- The membership renewal process was changed to renew all members on March 1.
- A new storage shed was purchased in April, which helped to clear closets and common areas in the observatories and planetarium.
- A Messier Marathon observing session was held at the observatory on April 1.
- In April, Gena Crook reported on the success of the school program funded through the NASA grant. Over 1000 students were served in nearly 40 programs throughout the '05-'06 school year for an astoundingly efficient $5/student, including transportation. VBAS won a replica of a Galilean telescope from the Night Sky Network for this outreach program.
- A new Meade 14" LX200 was acquired through the NASA grant and is now loaded in a van to form a mobile observatory.
- We closed the planetarium during the summer for a series of improvements and renovations, these included:
  - A new standing metal seam roof with 20 year warranty was installed.
  - The interior dome of the planetarium was smoothed and repainted with high reflectivity paint.
  - The interior walls were repainted by VBAS member volunteers.
  - New carpet was installed in the planetarium.
  - New audio equipment was installed in the planetarium, including a subwoofer under the projector.
- Eagle scout candidate Skylar Call led a team of volunteers to perform various tasks, such as painting the planetarium and observatory exterior, and improving the landscaping.
- We held a fantastic Astronomy Day in September, complete with science demonstrations, Lonnie Puterbaugh's Astronomy Van, rockets, and an official Planetarium reopening ceremony with ribbon cutting by Huntsville Mayor Loretta Spencer.
- Eric Johnson hosted the 3rd annual Volunteer State Star Party (VSSP) near Hohenwald, Tennessee.
- We held a joint observing session with UAH for the Mercury transit on 11/8.
- Walt Langley donated a digital pointing system for the C16, making the task of locating objects much easier.
- We renewed our rental agreement with the State of Alabama Park Service.
- The Swanson 21" progress has reached an important milestone with a "first light" session in late November. By early December, the first digital photos were taken.

It's been through the efforts of the many VBAS members and volunteers like you that these accomplishments were made. I'm very proud to be a part of this organization and to see the many wonderful activities and opportunities we bring to our members and the community through your efforts. On behalf of all the officers, I'd like to wish you each a very happy holiday season!

Jeff Delmas

Swanson 21" Progress

by Jeff Delmas

Since "first light" on October 14, the Swanson has been used in three additional observing sessions and a total of three work sessions. Several improvements were made to the general operations. Equipment was moved to the west side of the scope to clear more space for visitors, and a log book was added for recording observing sessions. After an initial work session on Friday 11/24, we were able to attach a Meade DSI CCD camera to take the following photo of M-42:

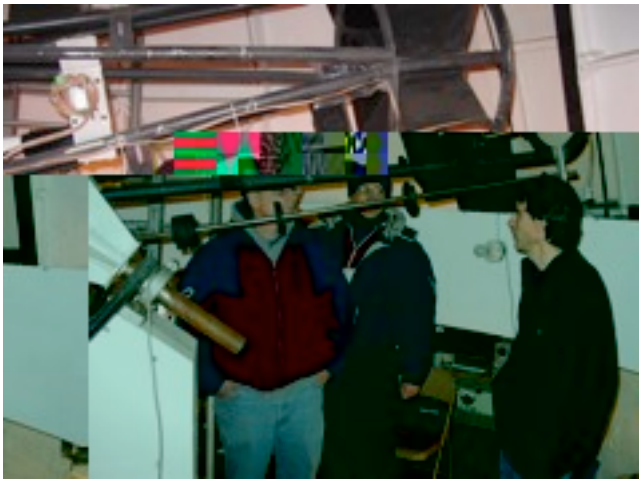
First CCD image taken with the Swanson 21", M-42.

From this first image, we could tell that we had poor collimation and poor focus. We decided to put effort into the collimation, and had a session on Friday, 12/1 to collimate the scope and try for another set of photos. We achieved good collimation and were able to put the CCD camera on once again for another round of photos. After collimation, we took the following photo:

M-42 taken with the Swanson 21" after collimation.

The collimation clearly made a great difference in the image quality. Both images were composed from a stack of 10 8-second exposures and enhanced in Photoshop.

Richard Sims and Allen Davis have done great work to get the scope, computer, and dome in usable shape. Collimation was done with the help of Jim Fly, Scott McCluney, John Miele, and Eric Peterson. If you want to help out over the coming holidays, please contact Jeff Delmas (president1@vbas.org) or Wes Swift (observatory1@vbas.org).



Jim Fly (left) and Scott McCluney (center) discuss the next steps in collimating the 21" with Jeff Delmas.

Sally Ride Science Festival at UAH, November 11, 2006

by John Young

The Sally Ride Science Festival was held in Huntsville for the first time on November 11th. The University of Alabama in Huntsville hosted the event at their Fitness Center. Founded by America's first woman in space, Dr. Sally Ride, the festival seeks to encourage girls in the fifth through eighth grades to pursue science and technology-related interests. John Young and Eduardo Mendoza arrived at 10 a.m. to setup VBAS' display booth for the Street Fair portion of the event. We brought reflector, refractor, and solar telescopes, the Davis meteorite collection, an optics display, and a big-screen flat panel playing astronomy videos. In addition, we put together a binder with a dozen or so biographies of female astronomers. Interest was pretty evenly balanced among the items at the booth, although it appeared that the front and center position of the meteorites gave them a clear advantage. Approximately 300 children and parents attended the two-hour Street Fair, which was followed by a lecture by Huntsville native and former astronaut, Dr. Jan Davis. In addition, numerous workshops were held for children and parents in other parts of the campus.

Thanks to Ken and Linda Farnell and Melissa Snider for logistics support and marketing materials.

Abstract: Replacing The General Covariance In the SM Dirac Equation Gauge Derivatives With An Equivalent General Covariance In The Metric That This Dirac Equation is Derived From

by David Maker

Attached is the abstract I submitted for the American Physical Society (APS) New England Meeting held a few weeks ago. It got me the top speakers position there and pretty mild questioning afterwards. I also gave a presentation on this subject matter at the APS March meeting in Baltimore. The people at that meeting know about the Dirac equation and it took only about 5 minutes to convince the people that would listen that this particular modification is right.

We replace the general covariance in the gauge derivatives in the Standard Model (SM) with a general covariance in the *original* metric that is used to start the derivation of the SM Dirac equation. This puts in the general covariance at the very beginning of the Dirac equation derivation, *where it belongs*. The result is a new Dirac equation

$$\frac{\sqrt{g_{\mu\mu}}\gamma_\mu \delta\psi}{\delta x_\mu} + i\omega\psi = 0$$

with

$$g_{00} = 1 - 2\frac{e^2}{rm_e c^2} = 1 - \frac{r_H}{r}$$

that does not require the covariant gauge derivatives anymore but yet still retains the general covariance creating a **ONE** free parameter theory, instead of 18 of the SM.

For example this new Dirac equation has a singularity-stability radius r_H and, because of equivalence principle considerations, is allowed only one type of charge e. Thus near r_H the $2P_{3/2}$ state for this new Dirac equation gives a tt azimuthal trifolium, 3 lobe shape; so this ONE charge e (so don't need **color** to guarantee this) spends **1/3** of its time in each lobe (**fractionally charged** lobes), the lobe structure is locked into the center of mass (**asymptotic freedom**), there are **six** 2P states (corresponding to the 6 flavors); which are the **main properties of quarks**!

Thus we end up with the experimental implications of the Standard Model (SM) by postulating just **ONE** particle with mass.

Go to http://bellsouthpwp2.net/m/a/maker3/ for the full paper.

The Night Sky for December, 2006

Here is the view at 9 PM in mid December, 2006, at 34° N Latitude, 86° W Longitude. Uranus, the circle-and-arrow symbol, will be near Aquarius. Uranus is easily visible by telescope, if you know where to look.

According to the International Meteor Organization's 2006 Meteor Shower Calendar, at http://www.imo.net/calendar/2006, there is one more meteor shower coming up soon. On Dec 14, the Geminids will peak during a waning crescent moon. To catch the peak, watch during the early morning hours of the day of the peak. For example, watch the Orionids from midnight Oct 20 until 5 am on the 21st. This is when your location on Earth is facing the direction the Earth is moving around the Sun. There will also be increased meteor activity during the days just before and after the peak. More info can be found online at the IMO, and places like http://skytour.homestead.com/met2006.html by Wes Stone.

Other Events: On December 9, Jupiter, Mars, and Mercury will triple planetary conjunction within 1°30' of each other. On the 10th and 11th, Jupiter, Mars, and Mercury will also be in triple planetary conjunction. On the 12th, Jupiter and Mars will be in conjunction. On the 31st, the Moon will occult the Pleiades.

Map courtesy of John Walker and YourSky (http://www.fourmilab.to/yoursky/). "Other Events" come from AstroPlanet.org.

VBAS Calendar of Events, December through January

Saturday, December 2, 2006, 10 AM to 3 PM
Facilities Working Party
Help perform much-needed maintenance of the VBAS facilities.

Saturday, December 2, 2006, 7:30 PM
Planetarium Show: *Star of Wonder*
Presented by ***Cassie Lofts***
What exactly was the object that the Wise men saw? Was it a star that stood in the sky two thousand years ago, and marked a single location in Bethlehem? Each year at this special time, we turn back the hands of time to look into the sky of long ago, to search for this mysterious object. As we ponder the skies of Bethlehem, we'll explore several possibilities including comets, meteors, novae, and other phenomena.

Friday, December 15, 2006, 7:30 PM
***NO MONTHLY MEETING* for December.**

Saturday, December 16, 2006, 10 AM to 3 PM
Facilities Committee Meeting and Working Party
Help perform much-needed maintenance of the VBAS facilities, and attend this month's Facilities Committee Meeting.

Saturday, December 16, 2006, 7:30 PM
Planetarium Show: *Star of Wonder*
Presented by ***Cassie Lofts***
Cassie Lofts reprises her presentation of our annual Christmas Star show.

Saturday, January 6, 2007, 10 AM to 3 PM
Facilities Working Party
Help perform much-needed maintenance of the VBAS facilities.

Saturday, January 13, 2007, 7:30 PM
Planetarium Show: *Living Off the Land*
Les Johnson, MSFC scientist and author of the book "Living Off The Land In Space", will describe how humanity might one day truly become an interplanetary species by learning how to use the resources available in the solar system. Imagine, we may no longer have to take everything with us as we go!

Friday, January 19, 2007, 7:30 PM
Regular Monthly Meeting
Visitors are welcome at our members meetings!

Saturday, January 20, 2007, 10 AM to 3 PM
Facilities Committee Meeting and Working Party
Help perform much-needed maintenance of the VBAS facilities, and attend this month's Facilities Committee Meeting.

Saturday, January 20, 2007, 7:30 PM
Children's Planetarium Show
Presented by ***Roy Young***
So, you got a telescope for Christmas! Figure out what to do next. Bring your telescope, and members of the VBAS will be available to answer all your questions!

Saturday, January 27, 2007, 7:30 PM
Planetarium Show: *Stellar Odyssey*
Presented by ***Roy Young***
The stars visible in late fall and winter are some of the brightest stars in the sky. Learn how to find nebulae and star clusters, multiple stars and the bright, winter constellations visible this season. Join VBAS Planetarium Director ***Roy Young*** as we locate these celestial jewels and discover where stars come from and how they will end their lives.

...And as always, for the most up-to-date information about VBAS events, be sure to check the web site at http://vbas.org/events.cfm .

VBAS Draft Member Meeting Minutes

VBAS Planetarium, 7:30 PM on Friday November 17, 2006
by Steve Sloan

President Jeff Delmas introduced the meeting. New members and guests introduced themselves. Rick Laws was a past member from Limestone County, who recently renewed his membership. Garth Patterson was one of our guests.

Jeff summarized the Treasurer's Report for October. Total income for the month was $437. Expenses were about $767, with $530 of that going to building maintenance. We spent $72 from the NASA grant. We had a net income of -$330 for the month. There is $50,387 remaining in the NASA grant, plus $11,734 in non-grant funds in the checking account. We have a total of $16,520 in non-grant funds. We are still well in the black.

We will be holding a work party tomorrow. There has been sparse turnout so far. We need to do haz-mat work, to gather items for turn-in. The leaves need to be cleared. Work parties will be regularly scheduled on the first and third Saturdays of each month. They will usually run from 10 AM to 3 PM, but it will probably end at 2 PM tomorrow.

Here's a final picture that didn't make it into last month's article about Bruce Potter's telescope-building project. Bruce: "The finished scope. This one would fit in the 'Kitchen Table Dob' category because it was literally built on my old kitchen table."

The Volunteer State Star Party was held last weekend. There were 10-12 people in attendance, including the Burlesons, Michael Cowger, Jeff Delmas, and John Young. The event was cancelled due to rain on Friday night, but seeing was wonderful on Saturday night.

The Peach State Star Gaze was held last week.

The transit of Mercury was also last week, but it clouded out early in the transit. However, a little later in the afternoon, the weather cleared up nicely. VBAS members met back at UAH at 3 PM, and the event turned out really well. If you have any pictures of the event, please send them to Steve Sloan.

We are working with the state of Alabama to renew our lease. The original lease began in 1955, and lasted for 25 years. In 1980, we got a 10 year renewal.

They sent back their response to our current proposal about 3 weeks ago. We got a concession agreement for just 5 years, but we want 10 years. According to state law, concession agreements must be less than 6 years. There is an exception if there is some kind of construction project that takes more time than that. Under the concession agreement, we have the right to build on this land.

Wesley Swift said that we have to go through political channels, rather than through bureaucracy, to get more time.

According to John Young, a concession offers more protection from a third party buying the land than a lease would.

Jeff said we will discuss the issue more in the board meeting. Without a lease, we won't be building anything.

Every December, VBAS holds two Christmas Star programs. This month, the program will be on the 2nd and 16th. We often need two programs per night, so we will need crowd control help. Contact Melissa Snider or Roy Young. Go to the officer contacts page at vbas.org for contact information. We also need help with parking, and manning the scopes (weather permitting.)

Meeting Adjourned

After the meeting, Michael Cowger introduced the program. None of our available scopes get enough use, so we will be showing how to borrow and use the telescopes. We will break into three groups, and give the presenter in each area about 10-15 minutes.

Contributions to Via Stellaris

We welcome contributions to our newsletter that may be of interest to the astronomical community. Contributions are best sent by email to Steve Sloan at editor1@vbas.org. If you don't have access to email, you can send articles in either Word or ASCII format to Steve at 2110 Villaret Dr, Huntsville, AL 35803.

Check Your Label

Look at the address label on the outside of your *Via Stellaris*. The first line contains the expiration date on the right-hand side. Please send your renewal to the Membership Secretary at VBAS, P.O. Box 1142, Huntsville, AL 35807. Make checks payable to the Von Braun Astronomical Society. If your mailing address changes, please report the new address promptly to the Membership Secretary, Linda Farnell, at 534-5060, to avoid missing issues of *Via Stellaris*.

Membership Dues Reminder

The VBAS currently has four categories of membership. All four include free admission to the planetarium shows; subscription to this newsletter; membership in the Astronomical League; and use of VBAS library and equipment. The four categories of membership and the dues for each are: REGULAR at $24.00 per year, FAMILY at $36.00 per year, STUDENT (must be full-time student) at $12.00 per year, and LIFE at $500.00. Newsletter Only is also available for $12.00 per year. Membership renewal occurs for all members annually on March 1st.

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Steve Sloan, Via Stellaris editor