

May Highlite:

Astronomy Day

May 10th

**NIGHTFALL**  
Huachuca Astronomy Club of Southeastern Arizona



## **HAC MEETING: Friday, May 16, 2008**

7 pm, Cochise College, Sierra Vista, Rm. 305A/B

PLUS our monthly Show-N-Tells, upcoming event details, refreshments & NEW Exciting Door Prizes!

**Speaker: Andrea Boattini      Topic: 'The Catalina Sky Survey'**

### Star Party Corner

Keith Mullen, Star Party Coordinator (520) 366-0049 email: [repogazer@msn.com](mailto:repogazer@msn.com)

*Participation is the Lifeblood of the Club!*

April has always been a windy month in our corner of Arizona, but this past April was one for the books, enough to make someone name their new observatory after. Rich Swanson, better known to some of us as Swanee, did just that. We learned of the new Observatory from Rich as the past months featured speaker, and we got a hands on tour as the location of the April Member Star Party. The observatory sports a 14" Meade LX 200 on a pier and wedge with a digital camera/StellaCam attached and connected to a monitor. Several members stayed on late into the night going through The Deep Sky Guys' (Bob and Glen) list of exciting objects on the monitor. We toasted Rich and his new observatory as we all hoped that this would be only the first of many Member Star Parties held at Windy Mountain Observatory.

The Public Star Party landed at the Patterson Observatory and was billed "The Saturn Watch". Even after newspaper and radio ads went out the turnout was less than spectacular. We found ourselves competing with a carnival being held in Veterans Memorial Park. Boy, did I blow this one by not checking into the possibility of other public venues being held on the same night. But not to worry, I won't get caught like that again. A noteworthy event was Earth Day 2008, held at the Farmer's Market sight on the corner of Wilcox and Carmichael Streets. Rich Swanson and I manned the booth and had the PST set up for solar viewing. Clouds and wind were the hot topic of the morning with Hans, Doug and Wayne stopping by to give Rich and I some much needed relief.

I.D.A. President Bob Gent was out of town on association business so we doubled as representatives of that organization too. If you missed it, it was your loss!

### May Star Party Schedule

Saturday, May 3<sup>rd</sup>.

The Member Star Party will be held at Discovery Observatory West. Glen and Deanna Sanner will be

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**STARIZONA**  
ADVENTURES IN ASTRONOMY & NATURE

Official Donor of the Huachuca Astronomy Club Door Prizes!!!

## President's Perspective

**Wayne Johnson**

Well, your president finally showed up at the HAC's Earth Day set-up just as Keith and Rich were packing up to leave. The clouds (first of the season) and the continuing winds of spring weren't too helpful for the solar viewing that was supposed to be highlighted. Despite the less than favorable weather, it would have been nice to have a few more members (other than Doug and I) show up for moral support and meet the public who is very interested in our activities.

The good news is that by 11a.m. when I arrived, Keith and Rich had handed out over 100 HAC brochures about our quickly approaching Astronomy Night at the Lawley Auto Complex starting at about 4 p.m. on Saturday, May 10th. We're expecting a good crowd at this event and so far about 12 members have volunteered to set up scopes!! Even if you don't have a scope, please show up to socialize with fellow HAC members and the public (potential future members!).

Even though I showed up late for the Farmer's Market portion of the Earth Day event, Arlene and I toured up and down a mysteriously car-less Fry Boulevard. It was an interesting experience walking on the road without having to worry about getting run over, except by a stray Harley or two (whose club had a very strong presence) on the west end of Fry.

However, I was not there merely for pleasure. As it turned out, I found some good meteorites for sale by a member, Brad Kern, of the SV Gem and Mineral Club and spent way too much on those celestial goodies. During the course of our conversation it came up that their club wants us to get involved with theirs

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### Dollar\$ & Cent\$

Bob Kepple

The Club has a checkbook balance (mid April) of \$4,364.13, + \$107.21 in petty cash.

### Library News

Hans Clahsen

This month's Library donations:

OPTICS by K.D. Moeller (644 pages)

COSMOLOGY 101 by David H. Levy (Paperback)

HYPERSPACE by Michio Kaku (Paperback)

UNIVERSES by John Leslie (Paperback)

MAJESTIC UNIVERSE by Serge Brunier (large coffee table edition)

Sky & Telescope June 2007

Sky & Telescope July 2007

### Club Resources

The Club has iron on HAC Patches available for \$2.00 ea.

Contact Bob Kepple at 366-0490/

astrocards@aol.com or Jeanne Herbert at 366-5690.

**Huachuca Astronomy Club** P.O. Box 922 Sierra Vista, AZ 85636 <http://hacastronomy.com> email: [mrgalxy@juno.com](mailto:mrgalxy@juno.com)

Yearly Membership: Individual: \$25; Family: \$35; Military: \$20; student:\$10 (with restrictions)

**President:** Wayne Johnson, [mrgalaxy@juno.com](mailto:mrgalaxy@juno.com) ; **Vice President:** Keith Mullen, 520.366.0049/ [repogazer@msn.com](mailto:repogazer@msn.com)

**Treasurer:** Bob Kepple: 366-0490/ [astrocards@aol.com](mailto:astrocards@aol.com); **Secretary:** Jeanne Herbert, 366-5690

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This issue of Nightfall can also be found on-line at [hacastronomy.com](http://hacastronomy.com). Click 'Newsletter' link. There is much more information about astronomy and our HAC activities on our club web site. \*To join the HAC-LIST, send an email to [haclist-subscribe@yahoogroups.com](mailto:haclist-subscribe@yahoogroups.com) .

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our hosts and we know it's always a good event at their place. Bring out your scope and tune it up for the following week's Astronomy Day event. Directions to DOW can be located in the HAC Web Page.

### **Saturday, May 10<sup>th</sup>, Astronomy Day.**

This year's event will be held at the Lawley Automotive center located at 2900 E. Fry Blvd. We will be setting up the solar viewing at 4:00 p.m. With the rest of the telescopes being up and at the ready by 6:30 p.m. The area Sean Lawley has provided is the service parking area behind the GMC Dealership. We will have power for any scopes and monitors that require its use. I have 14 members who have signed up to bring scopes (you know who you are) so no need to list the names. Of those promising to attend, please try to be on time and pizza will be provided for those working this event. Tell your co-workers, neighbors and friends about it and let's try to all help make this year's event the best ever. You can download an event flyer from the HAC Web Page to hand out and don't forget that we have TWO Celestron telescopes to be raffled this year.

**About the Speaker's Topic...** The Catalina Sky Survey (CSS) is one of the four programs currently funded by NASA to discover and track the orbits of Near Earth Objects. From mid-2004 up to now CSS has discovered about 1,500 NEAs and 100 comets, using three telescopes: a 29-inch Schmidt and a 60-inch reflector located on the Catalina mountains and the 20-inch Uppsala Schmidt at Siding Spring Observatory in Australia. During this time span the three telescopes have contributed to more than 60% of all the NEA discoveries. Survey strategies and results will be discussed.

## **Win a Telescope**

A new 3-inch Celestron Newtonian telescope was donated to the club with the instructions that it be given to a worthy HAC Junior Astronomer. Therefore, HAC would like to announce an essay contest. The winner will be awarded this telescope.

### **Essay Contest Announcement**

Any son, daughter or grandchild (16 years of age or younger) of a current HAC member that wants to win this telescope needs to write a one-page essay (max 300 words) on why they feel they deserve this telescope. The essay shall be titled:

### **If I had a Telescope...**

All essays will be judged and voted on by HAC Board of Directors during the meeting on the Wednesday prior to the regular June meeting, held on Friday, June 20<sup>th</sup>, 2008 at Cochise College, Sierra Vista, AZ. The results of the vote will be final and the winning Junior Astronomer will be notified and presented with the telescope that night.

**Deadline for Essay: Tuesday, June 17<sup>th</sup>, 7 p.m. MST.**

Please contact Keith Mullen with any questions: 366-0049. Submit online to [repozger@msn.com](mailto:repozger@msn.com).

*Travels on the Celestial Sphere - May*

## More Fine Spring Galaxies

*By Glen Sanner & Bob Kepple*

We continue our spring galaxy quest this month by highlighting some very nice galaxy pairs. All of the galaxies are fairly bright and may be found in the constellations of Leo, Coma Berenices, Virgo, and Bootes.

**NGC 3227, Type SAB(s)pec II-III, Size 6.9'x5.4', Mag 10.3v, SB 14.1, 10h23.5m+19°52' Leo**

**NGC 3226, Type E2:pec, Size 2.5'x2.2', Mag. 11.4v, SB 13.1, 10h23.4m + 19°54' Leo**

Located 40' east of the star Gamma Leonis=41, NGC 3227, the larger of the pair, is a spiral tilted somewhat to our line of sight. It is extended 3' x 1.5' NNW-SSE and has a stellar nucleus but a lower surface brightness than NGC 3226. Elliptical galaxy NGC 3226 lies 2.3' NNW of NGC 3227 and is a smooth, bright, circular 1.5' spot containing a stellar nucleus.

**NGC 3800, Type SAB(rs)b:pec, Size 2.0'x0.6', Mag. 13.5v, SB 12.8, 11h40.4m +15°20' Leo**

**NGC 3799, Type SB(s)b:pec, Size 0.8'x0.5', Mag. 14.0v, SB 12.8, 11h40.2m +15°20' Leo**

NGC 3799, also designated Arp 83, appears somewhat round with a slight NW-SE elongation and a brighter core. With enough aperture, spiral arms may be detected under excellent skies. NGC 3800 is fairly bright and is elongated 3:1 NE-SW measuring perhaps 1.5' x 0.5', its core is brighter and much extended.

**NGC 4278, Type E1-2, Size 3.5'x3.5', Mag. 10.2v, SB 12.7, 12h20.1m +29°17' Coma Ber.**

**NGC 4283, Type E0, Size 1.1'x1.1', Mag. 12.1v, SB 12.1, 12h20.3m +29°19' Coma Ber.**

This galaxy pair is separated by almost 4' in a NE-SW configuration. NGC 4278, the SW component, is the larger and brighter of the two with a 1.5' diameter halo and a small faint core containing a stellar nucleus. NGC 4283, about half the size of NGC 4278, is a round 1' diameter spot with a faint stellar nucleus.

**NGC 4340, Type SB(r)0+, Size 3.7'x3.1', Mag. 11.2v, SB 13.7, 12h23.6m +16°43' Coma Ber.**

**NGC 4350, Type SA0, Size 2.5'x1.0', Mag. 11.0v, SB 11.8, 12h24.0m +16°42' Coma Ber.**

This galaxy pair is found half a degree east of a 6.5 magnitude star. NGC 4340, the larger but fainter of the pair, appears as a broad oval halo elongated 1.5' x 1.25' E-W with a bright core and an inconspicuous nucleus. NGC 4350, lying 5.5' ESE of NGC 4340, is smaller but brighter than its companion and is elongated 2' x 0.75' NNE-SSW with a fairly bright core and stellar nucleus.

**NGC 4496A, Type SB(rs)m II-IV, Size 4.0'x3.2', Mag. 11.4v, SB 14.0, 12h31.7m + 03°57' Virgo**

**NGC 4496B, Type IB(s)m:, Size 1.0'x1.0', Mag. 13.5v, SB 13.3, 12h31.7m +03°56' Virgo**

This is probably the most difficult pair in this month's list and we wanted to challenge you with an observation. These galaxies are touching each other and appear to be interacting. NGC 4496A is a fairly bright circular 3' spot slightly elongated NE-SW with a faint core. NGC 4496B appears as a faint small oval haze, elongated 45" x 20" WNW-ESE attached to the SSE flank of 4496A. A 13th magnitude star lies just south of 4496B.

**NGC 4666, Type SbcII, Size 4.1'x1.3', Mag. 10.7v, SB 12.4, 12h45.1m +00°28' Virgo**

**NGC 4668, Type I:(s)m III, Size 1.1'x0.6', Mag. 13.1v, SB 12.5, 12h45.5m +00°32' Virgo**

NGC 4666, the larger of the pair, is a bright 4' x 0.75' NW-SE streak containing a thin much elongated core with a stellar nucleus. Two distinct dust lanes may be seen in large instruments while small scope

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*Space Place Astronomy Club Article*

## **Stellar Compass for Space Explorers**

by Patrick L. Barry

In space, there's no up or down, north or south, east or west. So how can robotic spacecraft know which way they're facing when they fire their thrusters, or when they try to beam scientific data back to Earth?

Without the familiar compass points of Earth's magnetic poles, spacecraft use stars and gyros to know their orientation. Thanks to a recently completed test flight, future spacecraft will be able to do so using only an ultra-low-power camera and three silicon wafers as small as your pinky fingernail.

"The wafers are actually very tiny gyros," explains Artur Chmielewski, project manager at JPL for Space Technology 6 (ST6), a part of NASA's New Millennium Program.

Traditional gyros use spinning wheels to detect changes in pitch, yaw, and roll—the three axes of rotation. For ST6's Inertial Stellar Compass, the three gyros instead consist of silicon wafers that resemble microchips. Rotating the wafers distorts microscopic structures on the surfaces of these wafers in a way that generates electric signals. The compass uses these signals—along with images of star positions taken by the camera—to measure rotation.

Because the Inertial Stellar Compass (ISC) is based on this new, radically different technology, NASA needed to flight-test it before using it in important missions. That test flight reached completion in December 2007 after about a year in orbit aboard the Air Force's TacSat-2 satellite.

"It just performed beautifully," Chmielewski says. "The data checked out really well." The engineers had hoped that ISC would measure the spacecraft's rotation with an accuracy of 0.1 degrees. In the flight tests, ISC surpassed this goal, measuring rotation to within about 0.05 degrees.

That success paves the way for using ISC to reduce the cost of future science missions. When launching probes into space, weight equals money. "If you're paying a million dollars per kilogram to send your spacecraft to Mars, you care a lot about weight," Chmielewski says. At less than 3 kilograms, ISC weighs about one-fifth as much as traditional stellar compasses. It also uses about one-tenth as much power, so a spacecraft would be able to use smaller, lighter solar panels.

Engineers at Draper Laboratory, the Cambridge, Massachusetts, company that built the ISC, are already at work on a next-generation design that will improve the compass's accuracy ten-fold, Chmielewski says. So ISC and its successors could soon help costs—and spacecraft—stay on target.

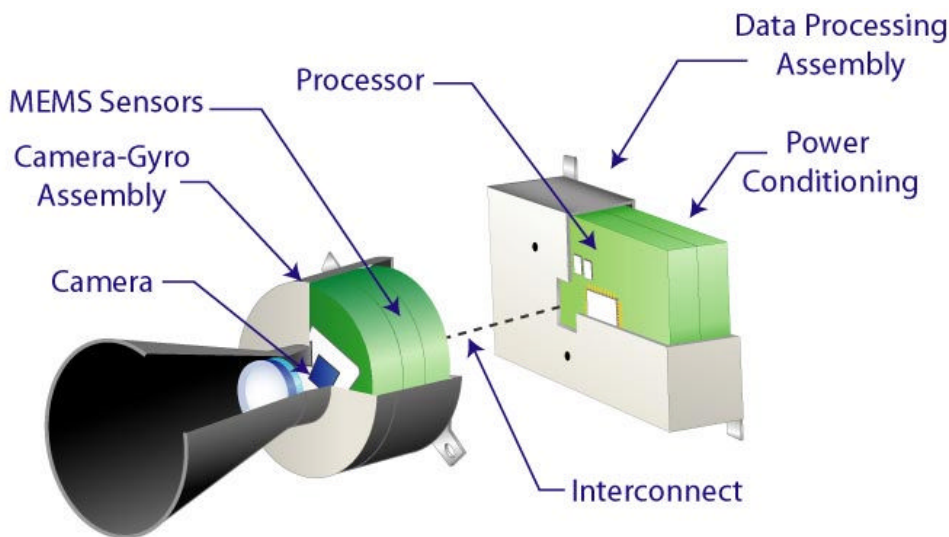
Find out more about the ISC at [nmp.nasa.gov/st6](http://nmp.nasa.gov/st6). Kids can do a fun project and get an introduction to navigating by the stars at [spaceplace.nasa.gov/en/kids/st6starfinder/st6starfinder.shtml](http://spaceplace.nasa.gov/en/kids/st6starfinder/st6starfinder.shtml).

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

Caption:

*Compass is built as two separate assemblies, the camera-gyro assembly and the data processor assembly, connected by a wiring harness. The technology uses an active pixel sensor in a wide-field-of-view miniature star camera and micro-electromechanical system (MEMS) gyros. Together, they provide extremely accurate information for navigation and control.*

*Note to editors: this image may be downloaded at [http://spaceplace.nasa.gov/news\\_images/](http://spaceplace.nasa.gov/news_images/)*





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in one of their future events. I asked whether they have someone who could talk about meteorites or something similar. I think it would be a good match.

Also, while we were walking down Fry on the way home, I was accosted by a guy, Steve Conroy, who wanted me to join the Kiwanis because they were "responsible for the skate park". Mention of the skate park immediately brought to mind the light pollution which will result and I mentioned the issue we have with it. To make a long story short, he said he would talk to the people responsible for lighting the park, and that it would be great to have a member of our club (Bob Gent?) present a short talk about light pollution at one of their meetings.

Clear skies,

Wayne (aka Mr. Galaxy), your resident president

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users may need to use averted vision. A 14th magnitude star lies 2.25' north of the galaxy's center. NGC 4668, lying 7.5' SE of the larger galaxy, is much fainter than NGC 4666 with faint diffuse halo elongated 1' x 0.5' N-S having no central brightening. A 13th magnitude star lies 2' ESE of the galaxy's center.