

# The Spectrogram

Newsletter for the Society of Telescopes, Astronomy, and Radio

September 2005

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S\*T\*A\*R  
P.O. Box 863  
Red Bank, NJ 07701  
On the web at:  
<http://www.starastronomy.org>

## September's Meeting

The next meeting of S\*T\*A\*R will be Thursday, September 1st.

Come hear LVAAS member Ray Harris present "The Art and Science of Early Printed Star Atlases" describing the evolution of the art and science of celestial cartography from the early 1500's through present times, focusing on the great atlases from 1540 through 1801.

The meeting will begin promptly at 8:00pm at the King of Kings Lutheran Church, 250 Harmony Road, Middletown.

## Please Pay Your Annual

## Dues at September's Meeting

Membership fees for 2005-6 of \$25 per individual and \$35 per family are due in September. Please make payments to Paul Nadolny at the September meeting so we can collect them quickly. If you can't make the meeting, please mail a check made payable to STAR Astronomy Society Inc to:

STAR Astronomy Society  
P.O. Box 863  
Red Bank, NJ 07701

## October Deadline

The deadline for the next edition of the *Spectrogram* is Friday September 30<sup>th</sup>. Please email any contributions to [gwarnes1@comcast.net](mailto:gwarnes1@comcast.net).

## Calendar

Sep 1, 2005 – "*The Art and Science of Early Printed Star Atlases*" - Ray Harris, LVAAS

Oct 6, 2005 – "*Searching for Earth-Like Planets: NASA's Terrestrial Planet Finder Space Telescope*" by Dr. Robert Vanderbei, Princeton University

Nov 3, 2005 – "*How does Pluto fit into the scale of the Solar System*" by Jerry Vinski, RVCC Planetarium Director

Dec 1, 2005 – "*Chandra's X-Ray View of Supernova Remnants*" by Dr. John Hughes, Rutgers University

Jan 6, 2006 - "*Ringed Basins on the Moon*" by Charlie Byrne, S\*T\*A\*R

Feb 2, 2006 - "*Science and Art as Viewed Through the Lens of Astronomy*" by Nick Lordi, S\*T\*A\*R

Mar 2, 2006 - "*An Empirical Determination of the Effect of Atmospheric Drag on Orbital Decay*" by Daniel Handlin, S\*T\*A\*R

Apr 6, 2006 – "*Cosmology*" by Dr. Joanna Dunkley, Princeton/Oxford

May 4, 2006 – TBA

Jun 1, 2006 – AGM

## President's Corner

By Steve Walters

Welcome to another fall season and the start of S\*T\*A\*R meetings for 2005-2006! I hope you have all had an astronomical summer full of observing or imaging sessions and starparties with beautiful dark skies, so filled with stars that you got lost! I really hope you've all gotten out and done some astronomy this summer!

If you didn't, it's not too late! The fall season will be upon us soon and it's my personal favorite, there are so many beautiful objects in the Milky Way to observe and image. It seems that I always get excited as the weather starts to cool off and the nights get longer! So if you've been lax this summer, get the scope and eyepieces out, clean them up at an ATM session, and be ready for the fall! Get out and check out some oldie goldies like Andromeda (M31), the Ring (M57) and the Dumbbell (M27). But once you've made a quick tour of the classics, dig out something new on your star charts, find it and observe it. Make that your goal for this fall, to see a few new objects! Stretch a little! Grow a little!

This summer our club had another great annual picnic thanks to Steve Fedor! Good food, good conversation, even a "Moonwalk" for the kids! We all owe Steve and his helpers our deep appreciation for their hard work! If you weren't there, you missed a really fine event! Make it a point to come next year!

We have a stellar line up of presentations planned for this season! Here is the list as it currently stands.

Sep 1, 2005 – "***The Art and Science of Early Printed Star Atlases***" - Ray Harris, LVAAS

Oct 6, 2005 – "***Searching for Earth-Like Planets: NASA's Terrestrial Planet Finder Space Telescope***" by Dr. Robert Vanderbei, Princeton University

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Apr 6, 2006 – "***Cosmology***" by Dr. Joanna Dunkley, Princeton/Oxford

May 4, 2006 – TBA

Jun 1, 2006 – Annual business meeting, no program planned.

As each new S\*T\*A\*R season begins, it is time to pay dues. So please bring yours to the meeting. See Paul Nadolny, our Treasurer, during the coffee break and help keep S\*T\*A\*R financial viable. We're depending on you to cough up the buckos, bucko! Thanks for your support!

## June Meeting Notes

By Steve Fedor

The annual business meeting of meeting of S\*T\*A\*R Astronomy was held on June 2nd 2005 and was attended by 26 members and non-members. At 8:05 pm president Steve Walters called the meeting to order. Steve began by welcoming a new member who found S\*T\*A\*R through the Turkey Swamp event and then stating the night's agenda.

Jordan Feder introduced the evening's speaker whom he had met while observing at Coyle field. The speaker was Rob Silverd who recently graduated with a Master's at Princeton University and will be pursuing a doctoral degree at Ohio State University.

The evening's topic was "Small Telescope Earthshine Observations and Extrasolar Planet Detection." Rob began by explaining how by altering the shape of aperture on space based telescopes in conjunction with using a masking technique resolution can be increased many times over the current methods used to detect extrasolar planets. This method could be used to detect earthlike planets up to two parsecs away. Unfortunately at the present time funding for this project is cancelled. More on this fascinating research can be found at <http://www.princeton.edu/~tpf/index1.htm>. The lecture was completed at 9:06.

The meeting continued with the presentation of "Certificates of Appreciation" for members who made outstanding contributions in 2004-2005 to S\*T\*A\*R. Each certificate was presented with an astrophoto taken by Steve Walters. The following members received the awards:

Doug Berger – for rapid advancement in observing abilities.

Jordan Feder – for the always informative and interesting "Object of the Month" presentations.

Steven Fedor – for organizing the very successful club picnic.

Charles Kirby and Randy Walton – for organizing refreshments at the meetings

Mike Lindner – for his efforts in maintaining S\*T\*A\*R's excellent web site.

Ernie Rossi – for his generous star party hospitality in the Catskills and numerous articles for the Spectrogram.

Gordon Waite – for graciously hosting the ATM nights at his place of business

Gavin Warnes – for his excellent work as editor of the Spectrogram.

At this time coffee break began. "Scope and Tell" was the new orchard type observing ladder which was specifically designed for astronomy and purchased for use with the club's 25 inch Obsession telescope.

At 9:33 the meeting resumed with "Objects of the Month." This month Jordan Feder presented M106 and its nearby galaxies along with a transit of Europa.

Steve Walters then went on to review the 2004-2005 season for S\*T\*A\*R.

New items:

New meeting agenda, Insurance, tracking of club assets, start beginner's SIG, purchase of 25 inch Obsession and training of 15 Q.O.'s.

Star Parties:

Allaire, Cheesequake, Holmdel village, Mill Lake, Arleth school, Atlantic Highlands, Holy Cross, Neptune, Lawrence Brook school, Manasquan Reservoir and Turkey Swamp.

Steve also reviewed the presentations and lectures. These can be found elsewhere in the Spectrogram and web site.

At this time the business portion of the meeting began. V.P. Dennis O'leary gave an overview of the club's assets and an accounting of the purchases made from the Observatory fund. He also acknowledged the donations of equipment in support of the 25 inch Obsession.

Treasurer Paul Nandolny handed out a ledger of the club's financial transactions and assets. He also presented a very detailed overview of all the accounting.

Steve Walters discussed the following: No need to change the annual member dues, Better insurance rates S\*T\*A\*R receives through the Astronomical League, how we need to expand efforts to obtain new members.

Charles Kirby presented the profits made on coffee sales at the meetings. Those figures will be included in next year's treasurer's report.

The July 30th club picnic will be held at Bucks Mill Park in Colt's Neck beginning at 3:30. Gavin Warnes, Charles Kirby, Nancy McGuire, Dennis O'Leary and Mike Lindner volunteered to assist Steve Fedor with the logistics. [thanks!]

The question was raised as to whether the date of the Spetember 2005 meeting should be changed since it precedes Labor Day weekend. It was decided no change was needed.

Jordan Feder acknowledged the contributions Steve Walters and Dennis O'Leary for their efforts as president and V.P.

At this time the annual elections of club officers was held. Frank Loso chaired the nominating committee. All the existing officers were running for reelection unopposed. Larry Campbell made a motion to accept all the existing officers as candidates and proceed with the election as a group. The motion was seconded by Mike Lindner. The existing officers were unanimously reelected.

The 50/50 was held. Ernie Rossi won the \$11.00 prize. The meeting was adjourned at 10:15.

## Improbable Bulls-Eye

*By Dr. Tony Phillips*

Picture this: Eighty-eight million miles from Earth, a robot spacecraft plunges into a billowing cloud almost as wide as the planet Jupiter. It looks around. Somewhere in there, among jets of gas and dust, is an icy nugget invisible to telescopes on Earth—a 23,000 mph moving target.

The ship glides deeper into the cloud and jettisons its cargo, the "impactor." Bulls-eye! A blinding flash, a perfect strike.

As incredible as it sounds, this really happened on the 4th of July, 2005. Gliding through the vast atmosphere of Comet Tempel 1, NASA's Deep Impact spacecraft pinpointed the comet's 3x7-mile wide nucleus and hit it with an 820-lb copper impactor. The resulting explosion gave scientists their first look beneath the crust of a comet.

That's navigation.

Credit the JPL navigation team. By sending commands from Earth, they guided Deep Impact within sight of the comet's core. But even greater precision would be needed to strike the comet's spinning, oddly-shaped nucleus.

On July 3rd, a day before the strike, Deep Impact released the impactor. No dumb hunk of metal, the impactor was a spaceship in its own right, with its own camera, thrusters and computer brain. Most important of all, it had "AutoNav."

AutoNav, short for Autonomous Navigation, is a computer program full of artificial intelligence. It uses a camera to see and thrusters to steer—no humans required. Keeping its

“eye” on the target, AutoNav guided the impactor directly into the nucleus.

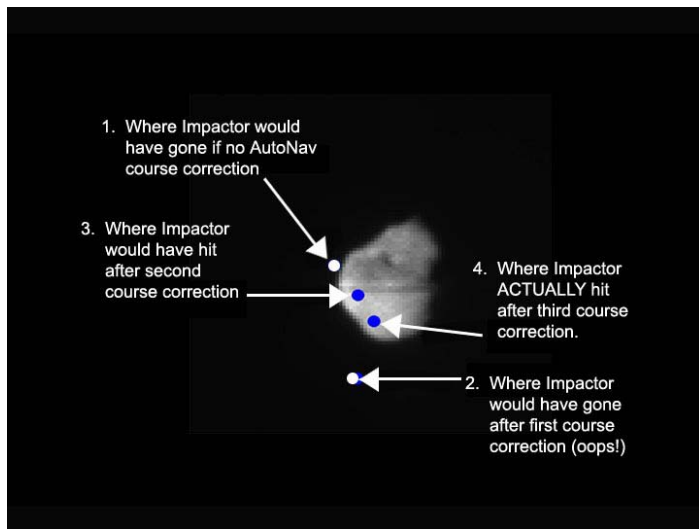
The system was developed and tested on another “Deep” spacecraft: Deep Space 1, which flew to asteroid Braille in 1999 and Comet Borrelly in 2001. The mission of Deep Space 1 was to try out a dozen new technologies, among them an ion propulsion drive, advanced solar panels and AutoNav. AutoNav worked so well it was eventually installed on Deep Impact.

“Without AutoNav, the impactor would have completely missed the nucleus,” says JPL’s Ed Riedel, who led the development of AutoNav on Deep Space 1 and helped colleague Dan Kubitschek implement it on Deep Impact.

En route to the nucleus, AutoNav “executed three maneuvers to keep the impactor on course: 90, 35, and 12.5 minutes before impact,” says Riedel. The nearest human navigators were 14 light-minutes away (round trip) on Earth, too far and too slow to make those critical last-minute changes.

Having proved itself with comets, AutoNav is ready for new challenges: moons, planets, asteroids ... wherever NASA needs an improbable bulls-eye.

Dr. Marc Rayman, project manager for Deep Space 1, describes the validation performance of AutoNav in his mission log at <http://nmp.nasa.gov/ds1/arch/mrlog13.html> (also check [mrlog24.html](http://nmp.nasa.gov/ds1/arch/mrlog24.html) and the two following). Also, for junior astronomers, the Deep Impact mission is described at <http://spaceplace.nasa.gov/en/kids/deepimpact/deepimpact.s.html>



Comet Tempel 1, as seen by the Deep Impact impactor’s camera. Three last-minute AutoNav-controlled impact correction maneuvers enabled the Impactor to hit the bulls-eye.

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

## Upcoming Events

Star parties and other astronomy-related events are an important part of the amateur astronomy experience. Listed below are several events offering dark skies.

**September 30 - October 2 The South Jersey Star Party** will be held at Belleplaine State Forest, Cape May County, NJ. Details at [www.hometown.aol.com/sjastroc/sjacsp1b.html](http://www.hometown.aol.com/sjastroc/sjacsp1b.html)

**October 11 The Novac Star Gaze** will be held at C.M. Crockett Park in Fauquier County, Virginia. Details at [www.novac.com/gaze/](http://www.novac.com/gaze/)

**October 30 – November 5 The Chiefland Fall Star Party** will be held at the Chiefland Astronomy Village, FL. Details at [www.c-av.com](http://www.c-av.com)



## Are you a S\*T\*A\*R Member?

S\*T\*A\*R is a member of United Astronomy Clubs of New Jersey (UACNJ) and the International Dark Sky Association (IDA). Meetings are the first Thursday of each month, except July and August, at 8:00 PM at the King of Kings Lutheran Church, 250 Harmony Rd. in Middletown . Meeting generally consist of lectures and discussion by members or guest speakers on a variety of interesting astronomical topics.

Memberships: ( ) Individual...\$25  
( ) Family...\$35 ( ) Institutional \$25

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_

Email \_\_\_\_\_

Make checks payable to: STAR Astronomy Society, Inc. and mail to P.O. Box 863, Red Bank, NJ 07701

# September Celestial Events

Compiled by Randy Walton

Day	Date	Time (LMT)	Event
Thu	1	19:30	Sunset
		20:55	Venus !.2 deg. S of Jupiter
		21:01	Venus Sets
		21:10	Jupiter Sets
Sat	3	03:35	Saturn Rises
		05:20	Mercury Rises
		06:30	Sunrise
		14:45	New Moon
		19:28	Sunset
		19:41	Moon Set
		21:00	Venus Sets
		21:00	Jupiter Sets
		22:20	Mars Rises
Tue	6	19:23	Sunset
		20:00	Jupiter 1.8 deg. N of Moon
		20:41	Moon Set
Sat	10	03:10	Saturn Rises
		06:00	Mercury Rises
		06:36	Sunrise
		19:17	Sunset
		19:35	Jupiter Sets
		19:50	Venus Sets
		21:55	Mars Rises
		22:44	Moon Set
Sun	11	07:37	First Quarter Moon
		23:37	Moon Set
Sat	17	19:06	Moon Rise
		22:01	Full Moon
Thu	22	18:23	Fall Equinox
Sat	24	01:20	Saturn Rises
		06:50	Sunrise
		18:53	Sunset
		19:45	Jupiter Sets
		20:35	Venus Sets
		21:10	Mars Rises
		22:58	Moon Rise
Sun	25	02:41	Last Quarter Moon

## In the Eyepiece

Here is a list of more objects for this month. This is reproduced from [www.skyhound.com](http://www.skyhound.com) with the kind permission of its creator and author of SkyTools Greg Crinklaw.

Object(s)	Class	Con	RA	Dec	Mag
<a href="#">Garnet Star</a>	Multiple Star	Cepheus	21h43m30.5s	+58°46'48"	4.2
<a href="#">Zeta Aqr</a>	Multiple Star	Aquarius	22h28m49.9s	-00°01'12"	3.7
<a href="#">LW Cyg</a>	Multiple Star	Cygnus	21h55m13.8s	+50°29'50"	9.2
<a href="#">M2</a>	Globular Cluster	Aquarius	21h33m28.4s	-00°49'39"	7.3
<a href="#">M15</a>	Globular Cluster	Pegasus	21h30m01.0s	+12°10'12"	7.3
<a href="#">Helix</a>	Planetary Nebula	Aquarius	22h29m38.4s	-20°50'13"	7.6
<a href="#">Humason 1-2</a>	Planetary Nebula	Cygnus	21h33m06.6s	+39°38'17"	12.7
<a href="#">NGC 7139</a>	Planetary Nebula	Cepheus	21h46m08.2s	+63°47'59"	13.0
<a href="#">NGC 7139</a>	Planetary Nebula	Cepheus	21h46m08.2s	+63°47'59"	13.0
<a href="#">Cocoon</a>	Diffuse Nebula	Cygnus	21h53m24.0s	+47°16'00"	10.0
<a href="#">IC 5217</a>	Planetary Nebula	Lacerta	22h23m55.7s	+50°58'00"	12.6
<a href="#">NGC 7094</a>	Planetary Nebula	Pegasus	21h36m53.0s	+12°47'19"	13.7
<a href="#">Stephan's Quintet</a>	Galaxy Group	Pegasus	22h36m00.5s	+33°57'57"	12.0
<a href="#">NGC 7354</a>	Planetary Nebula	Cepheus	22h40m20.9s	+61°17'39"	12.9
<a href="#">NGC 7354</a>	Planetary Nebula	Cepheus	22h40m20.9s	+61°17'39"	12.9
<a href="#">Einstein's Cross</a>	Gravitational Lens	Pegasus	22h40m32.5s	+03°21'48"	17.4

S\*T\*A\*R 2005 Picnic Photos

