



## Seattle Astronomical Society • January 2004

### January: Awards Banquet

*Speaker:* Ron Wodaski

CCD Astronomy

Saturday, January 24  
6 p.m.

Sorry, no late reservations  
can be accepted.

### January Awards Banquet

**Ron Wodaski speaks on  
CCD Astronomy**

Saturday, January 24, 2004

Ron Wodaski, author of "The New CCD Astronomy" and expert astrophotographer, will be our guest speaker. Ron's presentation will include information for the amateur astronomer who is new to CCD imaging and wants to get started.,

and also for those who are experienced imagers. Awards and door prizes will also be presented.

(Find out more about CCD on page 5.)



# Seattle Astronomical Society

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## From the President's Desk...

by Stephen Van Rompaey

At the December meeting we discussed the proposal to increase the club membership dues from \$25 to \$30 a year. Some of the members present wanted to spend some time exploring cost-cutting ideas that would avoid the dues increase. There was particular interest in eliminating our current newsletter and replacing it with an electronic version. Since the production and mailing of the newsletter is the club's primary expense, it makes sense to explore how to reduce these costs.

Earlier this year, when the Board began to realize that expenses were running high, we considered the idea of switching to an electronic version of the newsletter. We determined that there were two primary obstacles to this change. The first is that there are members in our club who do not use e-mail and these members rely on the monthly newsletter to keep themselves informed about the club's activities and schedule. The second reason is that the newsletter is the means used by the club to remind members that they need to renew their dues. If we eliminate the newsletter mailing, then we need to devise a new system. We didn't feel that it was plausible to assume that a majority of our members would keep track of in which month their SAS dues needed renewal. No doubt we all love this organization, but keeping track of when to renew your dues is something that slips through the cracks.

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**To address the first problem, of accommodating members who rely on receiving the newsletter in the mail, I need to collect information on how many members would be affected by eliminating the current newsletter.**

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To address the first problem, of accommodating members who rely on receiving the newsletter in the mail, I need to collect information on how many members would be affected by eliminating the current newsletter. I know that there are members in our club who through choice or economic constraints, don't have Internet access readily available. I want to ensure that this group of members continues to receive the newsletter in the mail. To help the Board decide whether or not to make a change in

*continued on page 4*

*President's Message: continued from page 3*

the how the newsletter is distributed I need to hear from everyone in the club who would be adversely affected by the elimination of the newsletter mailing. Please phone me at (206) 731-3675 to tell me that you want to continue receiving the newsletter in the mail. This is my work number and you can leave me a voicemail message if I'm not in the office. Please DO NOT phone me at my home number. My wife is very supportive of my SAS activities, but it is unfair to ask her to take a bunch of phone messages concerning club business. It is important that I hear from everyone who would be affected by this change. I'm going to assume that I will perfectly measure the impact of this change by the phone calls I receive.

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**Please phone me at  
(206) 731-3675 to tell  
me if you want to  
continue receiving the  
newsletter in the mail.**

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The only solution the Board could come up with concerning reminding members about their dues was to make January 1 the renewal date for everyone. For new members who join during the year, dues would be prorated. For current members, we would probably need a year to coordinate the transition. The primary labor cost for the club would involve the work that the Treasurer would need to track and inform members about what their dues would be next January 1.

Once the Board has collected information on the impact of moving to an electronic newsletter we will determine whether or not the original proposal for raising dues should be considered again. For those of you with Internet access please feel free to contact me or other Board members with any ideas you have about moving toward an electronic newsletter or dues renewal. I also want to take this opportunity to promote the "webftweb," the club's listserver group. The SAS has used this listserver group to communicate among club members for several years. There is not a lot of traffic on this group, so it should not add significantly to your e-mail inbox. To subscribe to the "webftweb" send an e-mail message to [majordomo@scn.org](mailto:majordomo@scn.org) and in the body of the message type: subscribe webftweb.

# What is a CCD?

from [http://www.space.com/news/ccd\\_explainer\\_000203.html](http://www.space.com/news/ccd_explainer_000203.html)

By Wil Milan

A CCD (Charge Coupled Device) is an electronic sensor that can detect and record patterns of light in a way similar to photographic film. But for astronomy, CCDs have several advantages over film, the chief being that they are much more sensitive than film and therefore can be used to photograph celestial objects too faint to record on film. (An example of this is the famous Hubble Deep Field image, which captured thousands of extremely distant galaxies too faint to be recorded with film.)

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**For astronomy, CCDs have several advantages over film, the chief being that they are much more sensitive than film and therefore can be used to photograph celestial objects too faint to record on film.**

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Another advantage of CCDs is that while film has to be processed and developed chemically, CCD sensors can be read directly by a computer and the image transmitted by wire or radio. That capability has made possible remotely operated and spaceborne telescopes such as the Hubble Space Telescope. It would have been impractical for the Hubble to shoot rolls of film that then had to be developed (and sent back to Earth); instead its CCD sensors are read by its onboard computers and the images transmitted electronically to Earth as soon as they are taken.

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For these reasons and a number of others, CCD sensors are the basis of all modern optical astronomy. At the focal point of every modern telescope there is a CCD camera recording the images and passing the data to a computer for recording and analysis. If that seems like exotic technology, consider that you probably own or use CCDs yourself: All modern camcorders use CCD sensors, as do all digital cameras, image scanners, and many bar code readers.

# So Little Time, So Many Galaxies

By Dr. Tony Phillips

Fourteen billion years ago, just after the Big Bang, the universe was an expanding fireball, white hot and nearly uniform. All of space was filled with elementary particles and radiation. "Soupy" is how some cosmologists describe it.

Today the universe is completely different. It's still expanding — even accelerating — but there the resemblance ends. The universe we live in now is "lumpy." Great cold voids are sprinkled with glowing galaxies. In galaxies, there are stars. Around stars, there are planets. On one planet, at least, there is life.

How we got from there to here is a mystery.

Finding out is the goal the Galaxy Evolution Explorer, "GALEX" for short, a small NASA spacecraft launched into Earth orbit April 28, 2003. GALEX carries an ultraviolet (UV) telescope for studying galaxies as far away as 10 billion light-years.

"GALEX is a time machine," says astronomer Peter Friedman of Caltech. Because light takes time to travel from place to place, pictures of distant galaxies reveal them as they were in the past. "GALEX is investigating the evolution of galaxies over 80 percent of the history of our universe."

The Hubble Space Telescope can see faraway galaxies, too, but GALEX has an advantage: while Hubble looks in great detail at very small regions of the sky, GALEX is surveying the entire sky, cataloging millions of galaxies during its 2-year mission.

GALEX is a UV mission for a reason. Friedman explains: "UV radiation is a telltale sign of star birth." Stars are born when knots of gas condense in interstellar clouds. The ones we see best are the big ones — massive stars that burn hot and emit lots of UV radiation. "These stars are short-lived, so they trace recent star formation."

Understanding star formation is crucial to studies of galaxy evolution. When galaxies collide, star formation surges. When galaxies run out of interstellar gas, star formation wanes. In galaxies like the Milky Way,

spiral arms are outlined by star-forming clouds. The shapes of galaxies, their history and fate ... they're all connected by star formation.

Even life hinges on star formation, because stars make heavy elements for planets and organic molecules.

"Our measurements of UV radiation will tell us both the rate at which stars are forming in galaxies and the distances of the galaxies," says Friedman.

How did we get here? GALEX will show the way.

Find out more about GALEX at [www.galex.caltech.edu](http://www.galex.caltech.edu). For children, visit The Space Place at [spaceplace.nasa.gov/galex\\_make1.htm](http://spaceplace.nasa.gov/galex_make1.htm) and make a beautiful galactic mobile while learning about some of the different shapes galaxies can take.



*This image of Messier 101 (M101), aka the "Pinwheel Galaxy," was taken in two orbits of GALEX on June 20, 2003. M101 is 20 million light years away.*



# January 2004

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10 Amateur Telescope Makers SIG Meeting 6:30 p.m.
11	12	13	14	15	16	17
18	19	20	21 UW Public Viewing Night 7 p.m.	22	23	24 SAS Annual Banquet 6 p.m. 
25 SAS Board Meeting 7 p.m.	26	27	28	29	30	31 Green Lake and Paramount Park Star Parties



# February 2004

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4 UW Public Viewing Night 7 p.m.	5	6	7 Amateur Telescope Makers SIG Meeting 6:30 p.m.
8	9	10	11	12	13	14
15	16	17	18 UW Public Viewing Night 7 p.m. Monthly SAS Meeting UW Room A102 7:30	19	20	21 Tiger Mountain Star Party 7:00 p.m.
22	23 SAS Board Meeting 7 p.m.	24	25	26	27	28 Green Lake & Paramount Park Star Parties; New Member Orientation
29						



# December Minutes Sirius Optics

by Thomas Vaughan

*Speaker:* Al Misiuk, Sirius Optics

## Announcements

The meeting began with these announcements.

- ★ The prospect of raising dues was brought up. There was a suggestion made that perhaps costs should be cut rather than revenue increased. Steven Van Rompaey will investigate the possibility of no longer distributing the newsletter on paper, since that is one of our greatest expenses.
- ★ The observing party on Table Mountain will take place on July 16, 17, and 18 of 2004.
- ★ The Astronomical League's National Convention will take place from July 20-24, 2004. The schedule is online at the League's website.

## Talk: Sirius Optics

Al Misiuk, from the Sirius Optics Company, gave a presentation on the company, and the filters it creates for astronomical viewing.

The founders of Sirius originally worked together at an avionics company. They founded Sirius Optics in November of 2000, in Kirkland.

The company's main products are optical filters. To create a filter, they use a glass substrate, and deposit many thin layers of different materials on its surface. When there are multiple layers stacked against each other, some wavelengths of light will pass through easily, while others will interfere with themselves and be reflected or absorbed. By finely tuning the layer thicknesses, Sirius can create filters with custom-tailored absorption profiles.

To deposit these thin films, they use a chemical vapor deposition system. This heats various elements up to high temperatures and distributes them as a gas in a controlled chamber. By controlling how much gas impacts the substrates, they can control the layer thicknesses.

Most of the deposition process is quite fast. Al joked that it took longer to

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clean (several hours) than to coat (around half an hour). On the weekends Al uses the deposition equipment to make and repair high-quality mirrors.

Al also commented on their quality control. They have a spectrometer that checks every filter. Any filter that doesn't match the desired profile to high tolerance is rejected.

One of their most popular filters is for viewing nebulae. This filter lets through almost all light, except for a band at 580 nm — the wavelength for sodium vapor lamps, the most common form of light pollution. Looking through a nebulae filter, the background light is eliminated, and you can get decent images of faint nebulae, even in areas with light pollution.

Al noted that every kind of viewing — nebulae and the different planets especially — had different filters that worked better. They had different custom filters for Mars, Jupiter, and Saturn.

They also recommended filters that blocked infrared radiation for CCD imagers. That's a form of light pollution that optical imagers don't usually have to worry about.

Sirius also makes variable filters, where you can adjust the filter's profile and strength on-the-fly. This was especially helpful for planets, where you can tune the filter to give the best image.

The question was asked: what was the best filter for a beginner? Al responded that a nebulae filter was probably best. These filters cut down a lot of the light pollution, and are very versatile.

Al also extended an invitation to any amateur astronomers that would like to tour their shops. He just asks that you call ahead.

Sirius Optics  
8730 122nd Avenue NE  
Kirkland, WA 98033  
425-803-6918  
<http://www.siriusoptics.com/>

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**What is the best filter for a beginner? Al responded that a nebulae filter was probably best. These filters cut down a lot of the light pollution, and are very versatile.**

# SPACE Lecture Series

Pacific Science Center is offereing a series of lectures in conjunction with its exhibit, SPACE: A Journey To Our Future. For more information, call (206)443-2001.



- ★ All **Saturday** lectures will be at 2 p.m. in the Adobe Laser Dome
- ★ All **Thursday** lectures will be at 7 p.m. in the Eames Imax Theatre

## Confirmed speakers:

### **Thursday, January 22, 2004**

7 p.m. in the Eames Imax Theatre,  
David Grinspoon, author of "Lonely Planets"

*NOTE: This lecture is free and open to the public!*

### **Saturday, February 7, 2004**

2 p.m. in the Adobe Laser Dome  
Dr. Randii Wessen  
"The Future of U.S. Robotic Planetary Exploration"

As the millennium closed, so did the era of once every decade, large-scale planetary spacecraft. Future robotic planetary spacecraft will have a wide range of capabilities, diverse mission objectives, and be launched almost one per year. Among the many mission objectives, some of these future explorers will be the landers and sample return missions of tomorrow. To meet these bold endeavors, these ambassadors from Earth will require advanced mission concepts, new operational approaches, as well as technologies that have yet to be developed.

To organize this effort, the United States robotic planetary exploration program has been divided into these areas: Earth Exploration, Mars Exploration, Outer Planet Exploration and the Universe. Dr. Wessen's presentation will describe each of these areas, the major missions currently in operations, and those being planned. It will also have a special emphasis on the quest for extra-solar planets and the search for life in the cosmos.

*continued on next page*

## **Thursday, February 19, 2004**

7 p.m. in the Eames Imax Theatre

Dr. Thomas Quinn, University of Washington

**"Planetary Formation"**

Over one hundred planets have been discovered outside our Solar System, all within the past decade. This vast growth in our knowledge of planets has forced us to rethink our ideas about how planets are formed. The methods for finding these planets will be described and the properties of the planets will be discussed, and the new ideas about planet formation will be presented.

## **Saturday, March 6, 2004**

2 p.m. in the Adobe Laser Dome

Dr. Steven Lee

**"New Views of Mars – The History and Future of Mars Exploration"**

Dr. Lee's presentation will give an overview of how earlier telescopic and spacecraft observations have been used to explore the planet Mars, and will discuss what new Hubble Space Telescope, Pathfinder, Mars Global Surveyor, and Mars Odyssey data are revealing about conditions on Mars at present. The future of Mars exploration will be discussed, including previews of the missions currently en route to Mars, those planned for the coming decade, and plans for eventual human exploration of the Red Planet.

## **Saturday, April 3, 2004**

2 p.m. in the Adobe Laser Dome

**Paul Hodge, author of "Higher Than Everest"**

## **Saturday, May 1, 2004**

2 p.m. in the Adobe Laser Dome

**Lynn Moroney, Chickasaw Storyteller**

Through "Science Story" Lynn Moroney explains how and why stories have been used to teach people about the world, and the place of story in astronomy and other space sciences. Long before we went into space, it was the stories, that helped us wonder about the universe and even today they invite us to wonder and spark our curiosity. Space isn't just for scientists, rather the arts help us "know" the world, and when we blend the two, we can have a richer understanding of the universes and ourselves.



## **Membership Information**

Choose from the membership and subscription options listed and mail this form and your check to the address below. For family memberships, please include the names of persons you want to appear in the membership directory. For student memberships, please include verification of full-time student status (such as student ID card). For renewals, please attach magazine subscription renewal cards.

### **The Seattle Astronomical Society**

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**Seattle, WA 98103**

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