

SEATTLE
ASTRONOMICAL
SOCIETY



The
Webfooted Astronomer

March 2003

March 2003 Meeting— 19 March



Next Meeting:

Wednesday, March 19th, 7:30 p.m.

Auditorium Bldg. of the Astro/Physics Bldg. on the UW Campus

Our principal speaker at the March 19 monthly meeting of the Seattle Astronomical Society will be Linda Khandro of the Department of Astronomy at the University of Washington in Seattle, who will present the local history and current status of Project AstroBio.

Linda will be joined by SAS members Greg Donohue, Rubie Sanbourn and Karl Schroeder, who will describe their experiences as participants in Project AstroBio.

Project Astro has long enhanced science and astronomy education by fostering partnerships between teachers and astronomers, astronomy clubs, universities, observatories and planetaria. Here in Seattle, since 2002 Project Astro has evolved into Project AstroBio, an amalgamation of "classic" Project Astro with a new component that incorporates teaching about astrobiology, the study of life in extreme environments and the possibility of life on other bodies in our and other planetary systems.

The meeting begins at 7:30pm in room A-102 of the Astronomy/Physics Auditorium building on the University of Washington campus.

- From Programs VP - Brian Allen

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President's Message

By *Stephen Van Rompaey*

From the President's Desk...

For those of you who were out drinking beer with the Squawk Mountain Gang last night, you missed not only a great presentation by Professor Tom Quinn on gas giant formation, but also my announcement about the new observing awards page that has been added to the club's website. Mike Langley, our new VP-Education, has been laboring hard to identify club members who have received observing awards from the Astronomical League. If you have not contacted Mike yet and your award does not currently appear on the website, please email him your award name and date of the award at education@seattleastro.org.

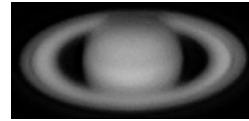
Although I have been observing seriously for almost two years now, I still view myself as a beginner in many ways. For example, I have not paid much attention to comets and have not done any systematic planetary observations. Dr. Quinn's lecture was particularly timely for me because this Winter I have begun observing Jupiter and Saturn, mostly from my backyard in Bellevue. Of course, I pointed my 8" Dob at Jupiter and said "OK, where's the Great Red Spot?" I did this off and on for a couple of weeks, but didn't see anything on Jupiter's surface that I believed was the GRS.

Everyday I spend some time reading the *starrynights* Group on Yahoo.com, where people from all over the world post observing reports. In one message about Jupiter someone recommended looking at a Jupiter simulator program called "The Planets" that can be found on the Castle Point Astronomy Club website: (<http://www.cpac.freemove.co.uk/>). You can download this Java application and run it through the web browser on your machine without connecting to the internet. You set your location for Seattle and then for any time you can check Jupiter's appearance for the GRS and other types of Galilean satellite events, such as when a moon's shadow can be seen on Jupiter. Jupiter appears by default in this program as you would see it in a Newtonian reflector, but you can adjust the orientation for other types of telescopes. Since I started using this program I have definitely found the GRS, which does not appear very red right now, and I have seen Io's shadow on Jupiter. So, for the beginning astronomer who wants to observe Jupiter I recommend a program like this. For me, knowing where and when to look makes all the difference.

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Star Parties — Come out, come out...

Wherever You are on March 8th



Greenlake*

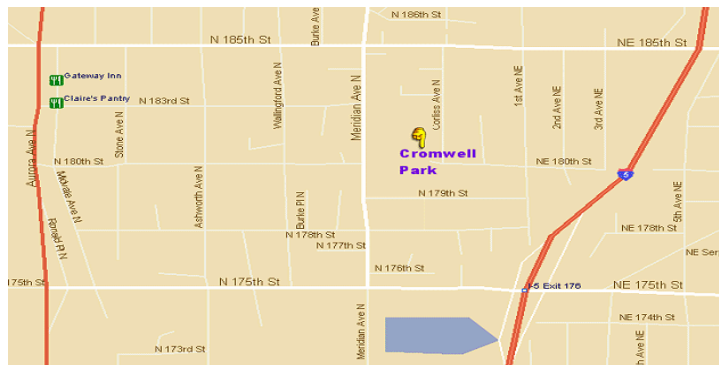
Green Lake star parties are on the north shore at a grassy area west of the Bathhouse Theater, near the fishing piers on the lake. Everyone is welcome to look through any of the instruments at whatever is in the sky that night. Wear warm clothes. Bring a friend!

Location

* See Map on opposite page! ...And below.

Schedule

Both the Greenlake and Cromwell star parties usually occur on the Saturday closest to the first quarter moon, so we always have at least one celestial object in the evening sky to show you, Seattle weather permitting. If it's raining, or completely cloudy, don't come - otherwise, it's always worth a try!



Dates for 2003	March 8	April 12
May 10*	June 7	July 5
August 2	September 6	October 4
November 1	November 29**	December 27





Seven Strangers?

By Dr. Tony Philips

At the dawn of the space age some 40 years ago, we always knew who was orbiting Earth or flying to the Moon. Neil Armstrong, Yuri Gagarin, John Glenn. They were household names--everywhere.

Lately it's different. Space flight has become more routine. Another flight of the shuttle. Another visit to the space station. Who's onboard this time? Unless you're a NASA employee or a serious space enthusiast, you might not know.

***Dave Brown, Rick Husband, Laurel Clark,
Kalpana Chawla, Michael Anderson,
William McCool, and Ilan Ramon.***

Now we know. Those are the names of the seven astronauts who were tragically lost on Saturday, Feb. 1st, when the space shuttle Columbia (STS-107) broke apart over Texas.

Before the accident, perhaps, they were strangers to you. But if that's so, why did you have a knot in your gut when you heard the news? What were those tears all about? Why do you feel so deep-down sad for seven strangers?

(continued from page 10)

Astronauts have an unaccountable hold on us. They are explorers. Curious, humorous, serious, daring, careful. Where they go, they go in peace. Every kid wants to be one. Astronauts are the essence of humanity.

They are not strangers. They are us.

While still in orbit Dave Brown asked, jokingly, "do we really have to come back?"

No. But we wish you had.

Please see the NASA Home Page-
(<http://www.nasa.gov>) for more information on the
Columbia Investigation. - Tony Philips

~~~~ In Tribute ~~~



# March 2003

| Sun        | Mon | Tue        | Wed        | Thu | Fri | Sat |
|------------|-----|------------|------------|-----|-----|-----|
|            |     |            |            |     |     | 1   |
| ☉<br>26:16 | 2   | 3          | ☾<br>2:10  | 4   | 5   | 6   |
| 9          | 10  | ☀<br>10:58 | 11         | 12  | 13  | 14  |
| 16         | 17  | 18         | ☾<br>14:30 | 19  | 20  | 21  |
| 23         | 24  | 25         | 26         | 27  | 28  | 29  |
| 30         | 31  |            |            |     |     |     |

## Schedule of Events

- March 1 – Planets, Stars & Galaxies Workshop at the UW
- March 2 – Astroimagers meet at Keith Alred's
- March 5 – UW Public Viewing Night  
7pm
- March 6 – UW Colloquium
- March 8 – Star Parties:  
Greenlake & Cromwell Park      7 pm
- March 13 – UW  
Colloquium
- March 15 – Telescope makers @ Peter Hirtle's
- March 19 – Speaker:  
Linda Khandro Project Astro





# April 2003

| Sun | Mon | Tue        | Wed        | Thu | Fri | Sat |
|-----|-----|------------|------------|-----|-----|-----|
|     | ○   | ○<br>19:19 | 2          | 3   | 4   | 5   |
| 6   | 7   | 8          | ☾<br>9:23  | 9   | 10  | 11  |
| 13  | 14  | 15         | ●<br>16:19 | 16  | 17  | 18  |
| 20  | 21  | 22         | ☾<br>12:18 | 23  | 24  | 25  |
| 27  | 28  | 29         | 30         |     | ☾   |     |

## Schedule of Events

- April 2 – 7:00 PM UW Campus Observa- tory public viewing night
- April 5 – Poo Poo Point Star Party (Members Only!) - 7:30
- April 12 – Greenlake & Cromwell Park Star Party
- April 12 – National Dark Sky Week
- April 13 – National Dark Sky Week
- April 14 – National Dark Sky Week
- April 15 – National Dark Sky Week
- April 16 – National Dark Sky Week
- April 16 – Main Speaker Meeting – 7:30
- April 17 – National Dark Sky Week
- April 19 – Amateur Telescope Makers SIG Meeting
- April 19 – National Dark Sky Week
- April 27 – May 4 – Texas Star Party

## A Letter from a "Star" Member

*By Chuck Taylor*

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Hi,

I'm an amateur astronomer in Tacoma, WA. After listening to our local club's newsletter editor pleading for more articles, I've come up with two new newsgroups to help solve this problem. They are AstroClub Newsletters (ACNL) and AstroClub Columns (ACC). It is an attempt to connect writers and editors under one roof. ACNL will serve as the discussion group for newsletter editors, and the initial entry point for writers. I will be contribute Lunar Feature of the Month articles to help get it started. I will also be looking to encourage others who like to write and would like to be published --- even if it doesn't make any money.

Writers can submit articles to ACNL. An editorial team will then select the best articles each month and repost them on the ACC list. Nothing else will be posted on ACC. Editors can then subscribe to ACC, and each month receive several articles to choose from for their local newsletter. No one will get paid, but new writers will get experience. And, if they later try to get something published in a commercial setting, they can point back to the articles published through ACNL and ACC. In this way, everyone wins. New writers gain a new venue. Old writers get better exposure. Editors no longer have to scramble to find articles, and readers get the best articles available. Additionally, the ACNL list will serve as a discussion area for editors and other club officers. At ACNL they can share their best ideas for promoting the club, increasing participation or hosting public star parties. And, they can pick up new ideas from other clubs.

The only limits are that no one gets paid, the articles are reprinted only in nonprofit local club newsletters, and that when an editor prints one of the articles, he or she includes the author's name, email address (if desired by the author), and a link to the author's web page if appropriate. Additionally, the editor will drop an email to the author to let them know their work has been printed. This will serve both as a courtesy, and an encouragement for the author to keep up the good work.

*Continued from page 10*

The clubs are located at:

<http://groups.yahoo.com/group/AstroClubColumns/>  
<http://groups.yahoo.com/group/AstroClubNewsletters>

Please use this as a resource for your newsletter. And, PLEASE, pass the word to any aspiring writers in your area.

Clear Skies!

Chuck Taylor

*The stars and stripes in flowers in Lompoc, CA, as taken from the sky.*



**The text of moving e-mail from shuttle crewmember Laurel Clark, released on Monday shows patriotism, as one of astronauts' ideals:**

*Hello from above our magnificent planet Earth.*

*The perspective is truly awe-inspiring. This is a terrific mission and we are very busy doing science round the clock. Just getting a moment to type e-mail is precious so this will be short, and distributed to many who I know and love. I have seen some incredible sights: lightning spreading over the Pacific, the Aurora Australis lighting up the entire visible horizon with the cityglow of Australia below, the crescent moon setting over the limb of the Earth, the vast plains of Africa and the dunes on Cape Horn, rivers breaking through tall mountain passes, the scars of humanity, the continuous line of life extending from North America, through Central America and into South America, a crescent moon setting over the limb of our blue planet. Mount Fuji looks like a small bump from up here, but it does stand out as a very distinct landmark. ... I feel blessed to be here representing our country and carrying out the research of scientists around the world. All of the experiments have accomplished most of their goals despite the inevitable hiccups that occur when such a complicated undertaking is undertaken. Thanks to many of you who have supported me and my adventures throughout the years. This was definitely one to beat all.. I hope you could feel the positive energy that beamed to the whole planet as we glided over our shared planet.*

*Love to all, Laurel.*

*(for complete text of this article, (& Laurel Clark's email), please go to:*

*[http://news.bbc.co.uk/2/hi/americas/2722465.stm.](http://news.bbc.co.uk/2/hi/americas/2722465.stm)*



Minutes

## SAS Club Meeting—19 Feb 2003

By *Thomas Vaughn*

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### SAS Club Meeting - 19 February 2003

Speaker: Dr. Tom Quinn, Assistant Professor of Physics,  
University of Washington

#### Announcements

The meeting opened with these announcements:

- An awards page has been added to the website, at <http://www.seattleastro.org/awards.html> Please email the VP of Education at [education@seattleastro.org](mailto:education@seattleastro.org) if you have any additions.
- We need a presenter for a Cub Scouts pack, in March. Again, see the [VP of Education](#) if you are interested.

#### Talk: Planetary Formation

The evening's speaker was Dr. Tom Quinn, Assistant Professor of Physics at the University of Washington. He works in the "N-body shop" at the UW, a collection of astrophysicists who have created sophisticated software for modelling large systems of particles. His topic was planetary formation. When one asks about the evolution of intelligent life, Dr. Quinn listed these as some of the most pressing questions:

1. Where did the Universe come from?
2. How do stars form?
3. How do planets form?
4. How does life arise?

How does intelligent life arise?

Dr. Quinn started with a brief history of the "Standard Theory" of planetary formation, then showed how the standard theory has recently been challenged by new experimental results, and finally showed some recent results from the N-body shop that might explain the observations.

The Standard Theory: The standard theory of planetary formation came mostly out of looking at our own solar system, since that was the sum total of experimental evidence. Some of the things people looked at were the similarities and differences between the inner rocky planets as well as general questions such as the expected size of planets, their composition, spin, and debris left over in the system (such as our asteroid belt).

*Continued from page 12*

The standard theory broke formation into four stages:

1. Coalescing cloud of gas and debris (just after the formation of the primary star).
2. Sedimentation of the cloud into many small clumps.
3. Formation of interacting planetesimals.
4. Final assembly and cleansing of the system.

Other behavior was postulated. For instance, gas giants would form well away from the primary star, since the solar wind would make it impossible to form gas giants too far in.

One important feature of the standard theory was its timescale. It was expected that the formation of planets would take tens of millions of years as the gas cloud coalesced.

There was a fair amount of evidence for this theory, such as:

- Our own solar system's mass density falls off linearly in distance from the sun.
- Comets and asteroids look like "rubble piles", the expected planetesimal composition.
- The Hubble telescope found other stars with clouds in stages 1 and 2 of the formation.

There have also been theoretical results which matched the standard theory's predictions. For instance, Dr. Quinn's team modelled our own solar system's formation as a gas cloud, assuming that Jupiter had already formed. Gaps in the gas cloud appeared at orbital harmonics of Jupiter's orbit, leading to the (thinned-out) asteroid field and denser bands for planetary formation.

#### **New Observations**

However, in the last ten years the standard model of planetary formation has come under attack. Since the 1990's, we have discovered hundreds of planets circling other stars. The problem is that these recently discovered extrasolar planets do not match the predictions of the standard model at all.

There are many unusual aspects of the newly-found solar systems:

- Many of them (over half) have gas giants orbiting very close to the primary star.
- With so many gas giants close to the primary, simulations show that rocky planets would quickly be catapulted out of the system by the larger planets' gravity.
- These new systems appear to have formed in less than a million years.

At first it was thought that the new systems were simply anomalies. However, as we kept finding these systems, it became clear that the standard model could not explain any of them very well.

#### **New Theory**

Dr. Quinn's team reasoned that perhaps new planets could form quickly in a massive, cool gaseous disk. They modeled these sorts of systems using their many-body software. They started off with these assumptions:

- They would treat the gaseous disk as a big collection of identical "gas bubbles", each with a mass of a small planet.
- Gas bubbles would interact via gravity only.

They started off with a uniform distribution of gas bubbles, starting from roughly 3 AU's, and extending to over 20. Performing a simulation took many months.

Their simulations were amazing, and sadly I can't do justice to them here in text. You can see for yourself on their home page: <http://hpc.astro.washington.edu/> (click on the "Multimedia Picture Gallery" link, then "Movies").

What they saw was that many large planets could form all at once, within the space of only 100 years.

Also, their simulations resulted in solar systems very similar to those being observed, in terms of orbital eccentricities, and the masses of the planets.

These are early results, and more work is underway. Their current models do not explain how large gas giants could form very close to a primary star. The best guess right now is that these planets form farther away, and migrate inwards.

Dr. Quinn then made some speculations, based on the new theory.

- Planets should be ubiquitous, since they can form so quickly.
  - Smaller, rocky inner planets (like Earth) might be much rarer.
  - Our own solar system may have had more large gas giants that spun away from the Sun at an early stage.
- There was a good question + answer session. Some of the points that were raised:

There is a space mission planned (named Kepler) to discover many more extra-solar systems.:

- Forming these planets quickly requires around 5 times the mass we see in our own solar system.;
- The important factor in formation is the ratio of mass in the disk to the mass of the primary star.;
- These measurements only work for older stars, since young stars have a high degree of variability that make it impossible to measure doppler shifts.

## Classifieds

### For Sale – Celestron C5 Plus

5 inch Schmidt-Cassegrain telescope with wedge. Specially fitted with declination control by control paddle, as well as the standard R.A. control. Excellent for photography. Includes eyepiece, optical finder, red-dot finder, Celestron reducer-corrector lens, other accessories. \$850.00 or best offer. Also tripod, \$75.00.

Pat Lewis, 206-524-2006

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University of Washington March Astronomy Dept. Colloquia

Mar. 6 David Catling,
University of Washington
Atmospheric Sciences
"The Evolution of the Environment on Mars"
Mar. 13 Zeljko Ivezic,
Princeton University
"Variable Sky: with SDSS towards LSST"

***** Attention All Members! *****

We will be publishing the membership directory in June, bundled with the June newsletter. The directory is for member use only and is a convenient tool for contacting others in the club with similar interests or to arrange group observing. Please make sure we have current address, phone, and email information on you by sending any changes to the club treasurer, Jim Peterson. You may email changes to Jim at treasurer@seattleastro.org or mail changes to Jim at: Seattle Astronomical Society, PO Box 31746, Seattle, WA 98103-1746.

If you do not want your contact information to appear in the directory, email or mail a request to Jim asking him to only include your name in the directory. All changes and requests must be received by May 15, 2003.

If you have an ad that you would like to submit, simply email: editor@seattleastro.org. Ads must be submitted two weeks prior to the beginning of the month in which you would like them published.

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.

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1 year of Sky and Telescope Magazine (*optional*) \$30.00

1 year of Astronomy (*optional*) \$30.00

_____ Donation (*optional*) \$ _____

Total amount enclosed: _____

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Address _____

Phone _____

E-mail address (*optional*) _____

Please print above information clearly.

Important: If you move, please send a change of address card to above address.

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