

# SKYNEWS



Jack and Alice Newton with Grandson  
with Dr. James Hesser at International Astronomy Day

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## MAY MEETING

**Mark Booth**

*Understanding the Role of Debris  
Discs in Planetary Systems*

Wednesday 11th, 2012  
University of Victoria  
A104 Bob Wright Bldg.  
3800 Finnerty Rd.

[www.victoria.rasc.ca](http://www.victoria.rasc.ca)

## On the Cover

At International Astronomy Day new and old friends come together to enjoy giving their time and showing the public what Amateur and Professional Astronomy is all about. In this image Jack and Alice Newton are with their Grandson with Dr. James Hesser in the Astronomy T-Shirt.

## May Speaker

Mark Booth

### Clearing Up the Dust:

#### *Understanding the Role of Debris Discs in Planetary Systems*

The number of planets discovered around other stars is now close to 1000, but there is more to planetary systems than the planets. As in the Solar System, other planetary systems also contain asteroids and comets. Collisions and sublimation of these planetesimals produces vast quantities of dust and this is known as the debris disc. This dust can be seen through reflection of starlight and thermal emission. I will discuss the history of these observations, some of the latest results and what the future holds in store.

#### *Biography:*

*Mark studied for his PhD at the University of Cambridge in the UK where he worked on theoretical modelling of asteroid and comet belts around other stars. He moved to Victoria in September 2010 to apply his modelling skills to recently acquired images from the Herschel Space Observatory.*

<https://sites.google.com/site/markybooth/>



## Presidents Report

*by Lauri Roche*

Well, that was quite a party we had for Astronomy Day. Even though the day and evening were clouded

out it didn't matter to the nearly 700 people who came to UVIC at some point in the day or evening. A big thank you to everyone who made the day such a success: to Sherry Buttnor who was our fearless leader, Sid Sidhu, the wizard of volunteer recruitment, Russ Robb and UVIC students who worked tirelessly in a multitude of areas all day, Eric Chisholm from the Centre of the Universe who had everyone enthralled with an infrared camera, and Nazim Açar with students from Pearson College who demonstrated how series of lenses worked. Thanks also to Stephen Courtin with his wonderful Planet Walk display in front of the Bob Wright building, to Bruno Quenneville and Scott Mair for their lively presentations on constellations and planetarium programs and our six professional astronomers from HIA and UVIC who fielded all kinds of questions at the "Ask an Astronomer" booth. We thank the students from Science Venture who came and challenged and delighted children with hands-on activities. We can't forget all the RASC volunteers who chatted with the public about how mirrors are made, how telescopes work, gave astrophotography tips and offered information, hand-outs and welcome to all. To top it all off, Bob Mc Donald gave a fantastic presentation in the evening. He proved why he is one of the best science journalists anywhere. He packed enormous amounts of scientific facts and concepts into an entertaining look into space travel, but in the end, showed us all how we are so very lucky to live right here on planet Earth. Thank you to everyone for a job wonderfully done.

But, as they say, no rest for the wicked. I joined a large group of people enjoying the “Super Moon” on Saturday evening at Island view beach. You could hear the clicking of cameras from all directions. Oh, if only we had **that** clear night for Astronomy Day. But wait, there’s lots more! I hope you will all plan to come out and watch the Solar Eclipse on the 20<sup>th</sup> of May and the Transit of Venus on the 5<sup>th</sup> June. Check the website for times and venues as we plan on being at several different sites for those events. It most certainly is an interesting time to be an Astronomy enthusiast. Enjoy!

## **Astronomy Cafe Update**

by Malcolm Scrimger

May is the last month for Astronomy Cafe and will start up again in September. If you have not visited yet do come by and see a presentation and/or do some viewing with this dedicated group of amateur astronomers that come each week. The 6 inch Dobsonian telescope is actively used to view the planets and other astronomical objects in the nearby soccer field in the evening. Mars and Saturn will be becoming more viewable in the coming months.

## **International Astronomy Day**

by Sid Sidhu

It certainly was a very successful IAD, great publicity and great group of volunteers. Public participation during the day activities (10:00 to 4:00) was **409**. For Bob MacDonald’s talk the ticker counter reached **250**, almost a full house.

So in spite of the missing sunshine the total public participation was **659**.

Thanks again to all the volunteers.

## **Observing Events**

### **20th of May Solar Eclipse**

There should be some members with telescopes setting up at various site around Victoria. Best plan is to check the website for locations. [www.victoria.rasc.ca](http://www.victoria.rasc.ca)

### **The transit of Venus - June 5th**

This is “the event” that all amateur astronomers want to see in their lifetime - a transit of Venus across the Sun. Members of the Victoria Centre will be setting up telescopes for these celestial events at various places around town for the public to see, so we need your participation. One telescope just won’t do when you have a lineup of 30 people wanting to look. The most popular will be the Transit of Venus and the Solar eclipse. When the events get closer keep an eye on your emails for possible locations to setup. More hands make for light work light collection that is.

## **Planets Around Other Stars**

### **What are exoplanets?**

Throughout recorded history and perhaps before, we have wondered about the possible existence of other worlds, like or unlike our own. The earliest understanding of the solar system showed us that there were indeed other worlds in orbit about our Sun, and steadily growing understanding of their natures shows that all are dramatically different from Earth, and mostly very different from one another. As we came to understand that the stars in the sky are other suns, and that the galaxies consist of billions of stars, it appeared a near certainty that other planets must orbit other stars. And yet, it could not be proven, until the early 1990’s. Then, radio and

optical astronomers detected small changes in stellar emission which revealed the presence of first a few, and now many, planetary systems around other stars. We call these planets “exoplanets” to distinguish them from our own solar system neighbors.

### How we know that there are planets around other stars?

Most of the detected exoplanets have revealed their presence by small effects that they have on their star. As planet follows its orbital path, the star follows a complementary motion of its own. This is a tiny effect proportional to the planet/star mass ratio – in the case of the solar system, the Sun moves in synch with the Earth at the speed of a slow dance – currently too slow to readily detect in a distant system. The motion of the Sun in synch with Jupiter, however, is closer to a fast run – and in favorable cases it can be detected by several methods. The motion of the host star can be measured as a shift in its spectrum (the Doppler shift) or as a change in its position on the sky ([astrometry](#)). In both cases these are very challenging measurements and require exquisitely sensitive instruments. Exoplanet orbits presumably have random orientations, and in some cases the orbit carries the planet between us and its star. Then the exoplanet might be detected by the decrease in the light from the star. Such [transits](#) have been observed, and a number of planets discovered by this method.

Another effect that can reveal the presence of a planet around another star is the bending of light from background stars by the gravitational field of an intervening star. If the intervening star has an orbiting planet it may alter the gravitational lensing effect in a noticeable way (microlensing). The large majority of the several hundred known extrasolar planets have been discovered by

the Doppler technique, and other methods are contributing more significantly as they are refined and the number of detected exoplanets continues to increase steadily.

### What do we know about our exoplanet neighbors?

Although the details are not entirely understood, it is known that stars like the Sun form from spinning protostellar disks of gas and dust. The Earth and other planets of the solar system are believed to have developed from the remains of that disk, and there is no reason to believe that the same process would not be effective throughout the galaxy. Thus a first guess might be that other planetary systems would be like the solar system.

However, the first detections of exoplanets revealed bodies which are utterly unlike any solar system planet – and subsequent discoveries have shown that many exoplanet systems are very dissimilar from ours. In some exosystems, planets as massive as Jupiter orbit so close to their star that they are heated to high temperature and their upper atmospheres are swept into space. In other systems, planets follow elongated orbits (in contrast to the nearly circular orbits of the solar system). However, our studies of exoplanets are just beginning, and it is not possible to be sure what will prove to be “typical” planets among our neighboring stars. Will most planet systems prove to be much like our own, or are we exceptional in more ways than we can imagine? Only years of further study will tell.

Some slim evidence is accumulating that exoplanet systems which resemble the solar system will be found. A [recent discovery](#) has shown that the star 55 Cancri, 41 light years away, has a system of 5 planets, with distributions somewhat similar to the solar systems inner planets (though with much

higher masses). As our measurements become sensitive to lower masses, some astronomers believe that we will find many such systems with a substantial complement of planets (perhaps even dynamically full – that is, containing as many planets as can coexist in orbital harmony).

In other reports, a number of planets with masses near that of Earth have been detected. The results are few, but because the measurements are very difficult, the detections are considered significant and possibly indicative of many more to be found in the future. Again, only years of study will tell.

### **What do we want to learn about exoplanets?**

A thorough understanding of exoplanets will tell us much about how our solar system formed, why it has small, rocky planets near the Sun, why it has gas giant planets far from the Sun, why the Earth has the conditions and chemicals that can support life, and why conditions on other planets are hostile to life. Theories of planet formation and evolution are incomplete, but offer specific predictions. Detections of exoplanets are already testing, validating, and in some cases invalidating, details of these theories.

Perhaps the most interesting question, and one of the most difficult to answer, concerns the uniqueness of the Earth. Are there planets similar to the Earth around other stars and does life exist on any other planet beyond our own Earth?

Further information can be found online [here](#).

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### **For Sale**

Meade Classic LX200 12" Schmidt-Cassegrain

Been observatory mounted from new and in excellent mechanical condition No tripod or wedge with it but it's programmed to be used in Alt-Az if bolted on a pier

#### **Comes with:**

Goto hand controller  
1 1/4" diagonal prism  
26mm Meade Super Plossl eyepiece  
4.8mm Tele-Vue Nagler eyepiece  
Telrad and finder

Original instruction book is available

Motherboard needs a part replaced: Detailed instructions to remove the motherboard and other essential equipment will be supplied.

\$1,000 OBO

Contact Bill Almond by email or 250-478-6718

Further items for sale are on our website at <http://victoria.rasc.ca/resources/buysell.html>



**Astronomy Day 2012.**

Eric Chisholm demonstrates an infrared camera at International Astronomy Day which was held at the Bob Wright Building at the University of Victoria. 659 members of the public were in attendance that day which made for some a busy times for some volunteers at various tables throughout the event.

**ASTRONOMY  
CAFÉ**



**Fairfield Community Centre**

1330 Fairfield Rd. Victoria,  
7:30pm - 10pm

Call Malcolm at (778) 430-4136 for directions and information.

New comers are especially encouraged.



**New Observers Group**

Hosted by Sid Sidhu  
1642 Davies Road, Highlands. Call  
(250).391-0540 for information and directions.



**Email Lists**

**Observer / CU Volunteers / Members**

Contact Joe Carr to subscribe  
[web@victoria.rasc.ca](mailto:web@victoria.rasc.ca)

**NEXT REGULAR MEETING**

Wednesday May - 9th 7:30pm - A104 Bob Wright Bldg, University of Victoria, 3800 Finnerty Rd.

**RASC Victoria Council for 2011 / 2012**

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