



## Highlights:

**I: ASX's 8<sup>th</sup> Annual  
Faces of Space  
Lecture 1  
– Dec 9<sup>th</sup>, 2010**

**II: ASX's 8<sup>th</sup> Annual  
"Expanding  
Canada's Frontiers'  
Symposium"**

**III: The Sky This  
Month**

**IV: Other Astro/  
Space Events**

**V: International  
Space News**

Greetings Astronomy and Space Enthusiasts,

Last month, ASX participated in the Canadian Space Summit (Nov. 19-21) in Ottawa, both as attendee and presenter. ASX Advisor and former President, Farnaz Ghadaki, gave two talks titled 'Next Generation Considerations for Commercialization of Space', and 'Space Marketing' which included experiences and lessons learned from planning ASX's Symposium and other events. Both presentations were received well, with great comments.

ASX is pleased to announce the first lecture of the 8th Annual "Faces of Space" lecture series, as well as our speaker line up and date for the 8th Annual 'Expanding Canada's Frontiers' Symposium. Please see below for more information, as well as other news and upcoming events.

Clear Skies,  
ASX

## **I. ASX's 8th Annual "Faces of Space" Lecture 1**

**Featuring:** Chuck Black, Sales Executive in the IT industry; Expert Space Writer and Blogger; and Director at the Canadian Space Commerce Association

**Topic:** "Commercialization of Space"

**DATE & TIME:** Thursday, December 9, 2010, 7:00pm - 9:00pm

**LOCATION:** University of Toronto, St. George Campus,  
Hart House ([7 Hart House Cir, Toronto](#)), East Common Room

**Social event** following the talk at local Irish pub, Molly Bloom ([191 College St, Toronto](#))

**FREE ADMISSION, RSVP** to [space.society@utoronto.ca](mailto:space.society@utoronto.ca), with subject line "FoS1"

## **II. ASX's 8th Annual "Expanding Canada's Frontiers" Symposium**

**DATE & TIME:** Friday, January 28, 2011, 7:00 PM

(Doors open at 6:00 PM, Reception at 10:00 PM)

**LOCATION:** Convocation Hall, University of Toronto (31 King's College Cir)

**ADMISSION:**

Students: FREE (with ID and pre-registration) <http://asx2011symposium.eventbrite.com>

Public: \$15 advance (\$20 late purchase) <http://uofttix.ca/view.php?id=729>

**SPEAKERS:**

\* Prof. Alexei V. Filippenko, University of California at Berkeley, Team Lead of KAIT at Lick Observatory

\* Dr. Michel Lefebvre, University of Victoria, Team Lead of ATLAS detector at LHC

\* Prof. Gilbert Holder, McGill University; Canada Research Chair in Cosmological Astrophysics

**ABSTRACT:** The quest to understand the universe has been an endeavour of humans for centuries. In recent years, scientific research and discoveries in the astrophysics and particle physics arena have been increasing in numbers and gaining much popularity. Recognizing this, ASX is pleased to present a line-up of prominent speakers and relevant talk topics relating to the 'unraveling of the universe'. The talks feature phenomenon relating all the way from quarks to quasars - from latest particle physics research at the Large Hadron Collider (LHC), to Galaxy clusters and gravitational lensing, to supernovae, dark energy, and black holes.



## III. The Sky This Month

### Two meteor showers

December features two meteor showers: The Geminid meteors and the Ursids meteors

The *Ursids* provide a quieter show, with about 9 expected per hour at peak, December 22.

The *Geminids* are more active with up to 80 meteors an hour at peak, overnight December 13 into December 14.

### Total Lunar Eclipse

A Total Lunar Eclipse will darken the Moon on December 20 and 21. The limb of the Moon begins to fall into the dark shadow of Earth at 10:32 p.m. PST December 20, which is equal to 1:32 a.m. EST December 21 and 6:32 a.m. UTC December 21. The total stage, when the Moon is completely within Earth's shadow, lasts for approximately 73 minutes, from 2:40 a.m. to 3:53 a.m. EST. During totality, the Moon can take on strange shades, from orange to red to violet, depending on the particulates in the atmosphere at different locations. The event is over by 5:02 a.m. EST.

Total Lunar Eclipses can only happen during a full Moon; therefore the full Moon for December occurs at 3:13 a.m. EST on the 21st. Winter officially arrives in the Northern Hemisphere later that day with the solstice at 11:38 p.m. UTC.

### Uranus and Jupiter reaching their closest

Uranus has been floating inconspicuously near Jupiter all through October, November, and December, and during this time period the two planets reach their closest on the last day of the year, December 31, when they lie just a little more than half a degree apart. Even though Uranus is relatively bright, at magnitude 5.8, it is very tricky to know which point of light is the planet and which is just another star. Its proximity to Jupiter over the end of 2010 will help observers finally nab it. While Uranus is quite close to Jupiter on December 31, it is not the point of light closest to Jupiter. It's best to use a telescope to find Uranus. First aim it at Jupiter, the bright point of light in the west. Through the telescope, you will easily see the disk of Jupiter and its Moons. The closest point of light to Jupiter is actually a star of nearly the same brightness as Uranus by the name of 20 Piscium. This star is just to the lower right of Jupiter on December 31. Uranus can be found farther above Jupiter and a little to the right. Remember that through a telescope, the view will be inverted, which means Uranus will actually be found below Jupiter as you star-hop through the eyepiece. Keep tracking these two planets into the New Year, when on January 5 they are half a degree apart and side by side.

### **Observing Calendar:**

#### Wednesday 1 December

Both the crescent Moon and Saturn can be seen in the morning sky at around 06:00. Mercury is at its greatest eastern elongation. Due to its close proximity to the Sun it will be exceptionally difficult to observe until the end of the month.

#### Tuesday 7 December

The Orion Nebula (M42) is at its highest point in the sky just after midnight which makes it perfect for observing and imaging.

#### Monday 13 December

If you are able to observe Jupiter from approximately 22:00 onwards you'll be treated to a view of the Galilean Moons strung out to the west of the planet. The moons as you look at them will be Io, Europa, Ganymede and Callisto.

#### Tuesday 14 December

The Geminids meteor shower peaks tonight. Once the Moon has set at 00:30 you should have no problem observing the shower (providing the weather plays ball). If the conditions are good we could see up to a maximum of 100 meteors per hour.

#### Saturday 18 December

From now until 24 December Iris (asteroid 7) can be found in the constellation of Cancer close to the open cluster M67. Iris is at magnitude +8.6 and should be easily found with a small telescope or binoculars.

#### Monday 20 December

<< December 2010 >>						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	



Mercury is at an inferior conjunction with the Sun. After today you will find the planet in the morning sky to the east.

#### Tuesday 21 December

Full Moon. There is also a total lunar eclipse which will take place between 05:00 and 08:30. the Moon will actually set before the eclipse ends.

#### Wednesday 22 December

Ursids meteor shower peaks tonight. It's a very weak shower with approximately 10 meteors an hour at peak. The Moon is also likely to cause problems with trying to observe the shower.

## IV. Other Astro/Space Events

### IMAX Hubble - Last Chance!

Experience the Universe with the IMAX movie "Hubble"

DATES: Now until January 2, 2011

LOCATION: [Ontario Science Centre](http://www.ontariosciencecentre.ca), (770 Don Mills Rd, Toronto)

MORE INFO:

<http://www.ontariosciencecentre.ca/imax/default.asp?filmdetail=IMAX+HUBBLE>

NOTE: not a free event



### University of Toronto Astronomy Public Lecture

*"Star Children: The Past, Present and Future of Space Travel"*

Featuring Emma Lloyd, PhD student, U of T Department of Astronomy & Astrophysics

DATE & TIME: Thursday, December 2, 2010, 8:10 pm

LOCATION:

University of Toronto St. George Campus, McLennan Physical Labs  
(60 St. George Street), Room 102

MORE INFO:

[http://www1.astro.utoronto.ca/~gasa/public\\_talk/iWeb/Entries/2010/12/spacetravel.php](http://www1.astro.utoronto.ca/~gasa/public_talk/iWeb/Entries/2010/12/spacetravel.php)

### RASC Toronto Meeting Night

Featuring Blake Nancarrow, Andy Beaton, Hannah Park and Peter Hiscocks

DATE & TIME: Wednesday, December 8, 2010, 7:30 pm

LOCATION: [Ontario Science Centre](http://www.ontariosciencecentre.ca), Imperial Oil Auditorium (770 Don Mills Rd, Toronto)

MORE INFO: <http://toronto.rasc.ca/content/whatsup.shtml>

<http://www.ontariosciencecentre.ca/calendar/default.asp?eventid=802&ddmmyyy=06122010>



### RASC Mississauga Speaker Night

*"The July 11 Total Solar Eclipse from Easter Island"*

Featuring Dan Falk

DATE & TIME: Friday, December 10, 2010, 8:00 pm

LOCATION: [University of Toronto Mississauga Campus](http://www.mississauga.rasc.ca), South Building, Room SE2082

MORE INFO: <http://www.mississauga.rasc.ca/meetings.htm>



## V. International Space News

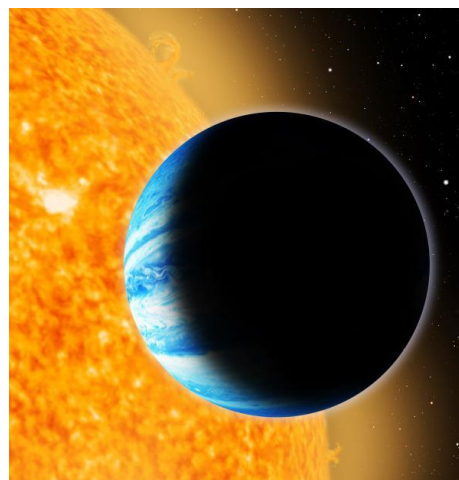
### New hot Jupiter-Like Exoplanet Discovered

A Qatar astronomer teamed with scientists at the Harvard-Smithsonian Center for Astrophysics (CfA) and other institutions to discover a new alien world. This "hot Jupiter," now named Qatar-1b, adds to the growing list of alien planets orbiting distant stars.

The Qatar exoplanet survey hunts for stars that "wink," dimming slightly every time an orbiting planet creates a "mini-eclipse" by crossing in front of the star as seen from Earth. Transit searches like this must sift through thousands of stars to find the small fraction with detectable planets. The complex observations and analysis create perfect opportunities for teamwork.

To find the new world, Qatar's wide-angle cameras (located in New Mexico) took images of the sky every clear night beginning in early 2010. The photographs then were transmitted to the UK for analysis by collaborating astronomers at St. Andrews and Leicester Universities and Qatar. That analysis narrowed the field to a few hundred candidate stars. The Harvard-Smithsonian team, with Dr. Al Subai, followed up on the most promising candidates, making spectroscopic observations with the 60-inch-diameter telescope at the Smithsonian's Whipple Observatory in Arizona. Such observations can weed out binary-star systems with grazing eclipses, which mimic planetary transits. They also measured the stars' dimming more accurately with Whipple's 48-inch telescope.

The resulting data confirmed the existence of a planet now called Qatar-1b, orbiting an orange Type K star 550 light-years away. Qatar-1b is a gas giant 20 percent larger than Jupiter in diameter and 10 percent more massive. It belongs to the "hot Jupiter" family because it orbits 2.2 million miles from its star -- only six stellar radii away. The planet roasts at a temperature of around 2,000 degrees Fahrenheit.



Qatar-1b circles its star once every 1.4 days, meaning that its "year" is just 34 hours long. It's expected to be tidally locked with the star, so one side of the planet always faces the star. As a result, the planet spins on its axis once every 34 hours -- three times slower than Jupiter, which rotates once in 10 hours.

### 50th Anniversary of SETI Commemorated with New Observing Project



This week astronomers from twelve countries on six continents will mark the fiftieth anniversary of the search for extraterrestrial intelligence (SETI) by beginning a coordinated series of observations of several nearby stars -- including two stars that were the target of the first search.

To demonstrate the advances in SETI over the past half century, on November 5, 2010, astronomers in Australia, Japan, and Korea will begin observations for radio and laser signals from civilizations circling these stars, followed over the next day by SETI searches in Italy, the Netherlands, France, Argentina, and the United States. Additional



observations will take place in late November 2010.

The first SETI experiment, Project Ozma, was conducted in April 1960 by astronomer Frank Drake, now at the SETI Institute in Mountain View, California. Project Ozma -- named after the book "The Wonderful Wizard of Oz" - - listened for radio signals from extraterrestrial civilizations and started a new field of science. To commemorate this first search and the advances in SETI science and technology over the past half century, astronomer Shin-ya Narusawa of Nishi-Harima Astronomical Observatory in Japan launched Project Dorothy, named after the heroine of the same story.

"It is thrilling for me to witness the beginnings of Project Dorothy, the continuation of my search of fifty years ago," said Drake. "To have so many talented people using so many telescopes in this new search, with the electronics and computer equipment of today, is a joyful thing to me. The equipment of today is far better than what we could have fifty years ago, and will result in both very much better and very much more data than could be obtained then."

"Two of the original stars from Project Ozma -- Tau Ceti and Epsilon Eridani -- are the nearest solar-type stars in the northern hemisphere," explained Narusawa. "Therefore, these two stars were the best SETI targets a half century ago. They remain the symbol of project Ozma and are two of the target stars for Project Dorothy," he added. "But astronomy has improved over the last five decades, and about five hundred planets have been discovered around other stars. Some of these stellar systems have planets located the right distance from their stars to support life. We also included such stars among the targets of Project Dorothy." "Project Dorothy vividly demonstrates just how far SETI has come in the past fifty years," said the SETI Institute's Douglas Vakoch, who is a member of Project Dorothy's Working Group. "Astronomers can now do SETI research at observatories from South Africa to the Netherlands, from Argentina to India, from Japan to Italy, as well as from the longstanding American projects at the SETI Institute, the University of California at Berkeley, and Harvard University. The lessons learned through Project Dorothy provide critical preparation for the day we finally detect a signal from another civilization," Vakoch explained. Because of the daily rotation of the Earth, many stars are visible for only a portion of the day from a single observatory. "By learning how to coordinate international SETI observations now, we'll be better prepared to track a signal continuously, around the world, after first contact," he said.

"Over the past fifty years our searches have not yet produced the discovery we all hope for," said Drake. "This is understandable -- in our vast and awesome universe it will take long, painstaking, and comprehensive searches before we will have a good chance of success. This is the major lesson learned from previous searches. Project Dorothy is a major step in meeting the challenge created by this lesson." The SETI Institute will observe five target stars using the Allen Telescope Array (ATA), located in northern California. The ATA will examine these stars between 1:00 a.m. and 5:00 a.m. Pacific Daylight Time, November 6, 2010.

---

If you did not receive this e-newsletter directly, and would like to hear about future ASX news and events, please email [space.society@utoronto.ca](mailto:space.society@utoronto.ca) with subject line "Newsletter Signup". We also invite you to join our Facebook group: <http://www.facebook.com/group.php?gid=2226718345>