Monthly Meeting - 5 May 7:30pm
Cawthron Institute Seminar Room, Milton Street
X-Ray Astronomy at home
using data from Chandra and the DS9 viewer.

Simon Crase will introduce us a range of free astronomy courses that are available from leading universities. Then he will show you a tool called SAOImage DS9, which allows you to view and process data from the archives from the Chandra XRay observatory.

EDITORIAL

This current month and the next few months I am naming planet season. That is because at the last public viewing session where we had a good turnout Jupiter was one of the main objects on display. In the next couple of months Saturn and Mars will be rising early enough in the evening that they also be what I call star attractions even though they are not actually stars. Jupiter is now past opposition, the time when it appears in the opposite part of the sky from the Sun. That also means we are closest to it in an yearly orbit around the Sun so consequently it has been brighter and appears larger than average in a telescope. Of the planets Jupiter is my favourite planet to view at star parties. This is because it is so big and bright and it is easy to spot the cloud bands that circle the planet. As an added bonus there are the four Galilean satellites that are almost always in view. Discovered by Galileo not long after he constructed his first telescope we can enjoy much much views than he ever did in even the most modest of telescopes now available for amateurs. Now in the next month or so Saturn will be trying to steal the limelight as Jupiter will get lower in the west at the start of a winter observing evening. Saturn I guess is my 2nd favourite planet, while not as big or as bright as Jupiter because it is in fact somewhat smaller than Jupiter and more distant the rings are always fun to observe, and most people will be able to spot Titan, the only moon of a planet in our solar system with a substantial atmosphere. Now I have never been a big fan of Mars. Most of the time it is a small red object that does not impress people, and seeing detail is a challenge that requires good seeing, good optics, and serious magnification. But Mars is making its closest approach in 11 years, so lets hope we get to see something.

Robert Rea

UPCOMING EVENTS

13 May - Public Night
Cawthron Atkinson Observatory

20 - 22 May - RASNZ Conference 2016: Napier

2 June - Tesla/Faraday and Implications for Astronomy - the Electrodynamic Universe - Speaker: Clive Rowe

Proxima Centauri Planets?

The Pale Red Dot Initiative, led by the European Southern Observatory is a campaign to examine the red dwarf star Proxima Centauri for exoplanets using the radial velocity method, which teasing out the signal of a planet tugging on its host star. In February Proxima Centauri passed in front of a background star and the Hubble Space Telescope was used to look for microlensing events. These are small spikes in the background star's brightness that a planet orbiting the red dwarf could produce as it passes in front of the star, magnifying the starlight as a lens would.

Contributions

Want to get published? Send your articles, comments etc. to
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Any member of the Nelson Science Society can become a member of the Astronomy Section simply by notifying the editor of Canopus. The annual membership subscription for the Nelson Science Society is $20.
What's Up

As the sky darkens Sirius appears in the west with Orion below it. Canopus is southwest of the zenith. Crux, the Southern Cross, and the Pointers are southeast of overhead while in the northwest is Regulus, the brightest star in Leo. Low in the northeast is Arcturus, a bright orange star who colour is often separated into flashes of red and green, an effect caused by the motions of Earth's atmosphere. Below Sirius or Rigel and Beteleguese, the brightest stars in Orion. Between them is a line of three stars: Orion's belt. To southern hemisphere star watchers, the line of three makes the bottom of the "The Pot", now tipped on its side. Sirius, 'the Dog Star', marks the head of Canis Major, the big dog. Sirius is the brightest in the sky although planets Venus, Mars and Jupiter can be brighter. Crux, the Southern Cross, is southeast of zenith. Left of it are Beta and Alpha Centauri is the closest naked-eye star, 4.3 light years away. It is a binary star: two Sun-sized stars orbiting each other in 80 years. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years away. Canopus is also very luminous and distant: 13,000 time brighter than the Sun and 300 light years away. Low in the east is the orange star Antares, marking the heart of the Scorpion. Antares means 'rival to Mars' in Greek. It is a red giant like Beteleguese; 600 light years away and 19,000 time brighter than the Sun. Red giants are dying stars, wringing the last of the thermonuclear energy out of their cores. Big ones like Antares and Beteleguese will end in massive supernova explosions in a few million years. Arcturus, in the northeast, is the brightest red star in the sky but, at 37 light years, is much closer than the red-giants previously mentioned. It is about 120 times brighter than the Sun. The Milky Way is brightest in the southeast toward Scorpius and Sagittarius. In a dark sky it can be traced up the sky past the Pointers and Crux, fading toward Sirius. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the Sun is just one. The thick hub of the galaxy, 30,000 light years away, is in Sagittarius. The nearby outer edge is by Orion. A scan along the Milky Way with binoculars shows many clusters of stars and some glowing gas clouds, particularly in the Carian region, to the right of Crux, and in Scorpius. The Clouds of Magellan (LMC and SMC) are midway down the southern sky, easily seen by eye on a dark moonless night away from city lights. They are small galaxies. The LMC is about 160,000 light years away and is about 5% the mass of our Milky Way. The SMC is around 200,000 light years away and 3% the mass of the galaxy. That is still billions of stars.

Jupiter shines at its highest in the north. The gas giant dims from magnitude -2.3 to -2.1. Its width shrinks from 41" to 37" at still displays elaborate telescopic detail during good seeing. Jupiter halts its retrograde (westward) motions against the stars and begins to move eastward in Leo. Mars arrives at its best opposition in 11 years on May 23rd, but its closest approach to Earth won't happen until the end of the month. You have to stay up late for Mars to rise high in the sky to allow decent views with a good telescope. Mars starts the month at magnitude -1.5 and brightens until it peaks at -2.1, equaling the magnitude of Jupiter. Variations in atmospheric activity in either Jupiter or Saturn can alter the brightness by a few tenths of a magnitude. In a telescope Mars appears 16.2" wide as the month opens, but reaches a maximum diameter of 18.6" at the end of May. That should be large enough to reveal numerous surface markings with a good telescope under good seeing conditions. Mars is in the constellation of Scorpius so you can easily compare it to Antares, sometimes referred to as the rival of Mars. Saturn follows Mars and rises about half an hour after Mars. Saturn is fainter and brightens less in the month, going from +0.2 to 0.0. by the end of May the size of the globe of Saturn will have grown to 18.4", almost exactly the same size as Mars. However Saturn's rings spread to 42" and are tilted at 26 degrees from edge on.

Disappearing Quasar

Astronomers tracking a distant quasar over a span of 13 years have reported that all signs of the quasar has disappeared. The quasar, known as SDSS J1011+5442 was first detected in 2002. A follow-up spectrum collected the next year showed all the signs of hot gas feeding a typical ferociously gobbling supermassive black hole sitting at the centre of the galaxy. The quasar's brightness declined steadily over the next decade, far more systematically than usually happens with such objects. In 2015 a visible-light spectrum was acquired of the black hole's disk of gas. There was nothing. Almost all the signs of the quasar had vanished. Instead there was only a relatively normal galaxy. This is not the first case of a disappearing quasar; astronomers now know of several "changing look" active galaxies. The best explanation of the disappearance is diet, kin which the black hole cut its feeding rate by a factor of 10. The accretion disk should still surround it, though. The outermost part of the disk should still surround it, though. The outermost part of the disk, which is responsible for the light, would normally take 800 years to gradually empty out and fade. It is suggested that rather than clear its plate completely in the few short years astronomers have been observing, the quasar swallowed the nearest, hottest gas from the inner accretion disk. This could happen quickly, in a month or two. The hot, inner gas would have emitted ultraviolet as it swirled toward the black hole, irradiating the outer disk to make it glow. So when the ultraviolet beacon near the black hole went dark, the outer disk would have lost its visible-light shine as well.