



Rudi's Weekly Report.

This has been an amazing week in Science, with the first ever black hole image captured.

The black hole recorded is at the heart of the elliptical galaxy Messier 87, and contains the same mass as 6.5 billion suns. This is a massive scientific achievement which will change the way we look at black holes, and also proves University of Canterbury Distinguished Professor Roy Kerr's 56-year old theory correct. Professor David Wiltshire provided RadioNZ with a full account of the significance of this milestone. <https://www.radionz.co.nz/national/programmes/lately/audio/2018690646/roy-kerr-s-black-hole-theory-proven-right>

Ground-breaking scientific discoveries will continue this weekend with the Elaine P. Snowden School in Astronomy taking place between the 12-17th April. The Astronomy School has been inspiring young scientists since 2002, and provides students with the opportunity to interact with interna-

tional researchers and carry out observations at Mt John. Dr. Karen Pollard has done an amazing job organising the School, and the students will be arriving on Saturday morning.

On Monday, 15th April, the New Zealand Institute of Physics Conference (NZIP) kicks off in ER. The NZIP conference will bring researchers and physics teachers from across NZ for a week of scientific and teaching exchanges. Professor David Wiltshire has been working relentlessly to make sure that the NZIP conference is a success!

As you might have noticed, we have had a number of young visitors in the School recently. Cliff Franklin has been running the Radioactivity workshops, whilst Graeme Plank and Amanda Inglis have been delivering the Spectroscopy workshops. On a related note, Graeme Plank has just taken over as the Outreach Coordinator.

This week, we have Dr. Sarah Masters as our featured member of staff. Sarah is currently our postgraduate director.

In other news, the BT building is coming along – Sharlene and Rachael have been coordinating with the University on timelines and processes for the move. Please keep an eye out for some information in the next few weeks.

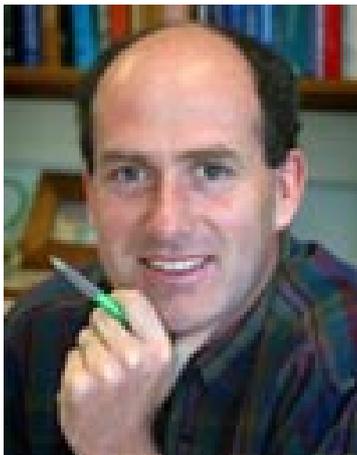
In more building news, Matt Polson led a safety walk-about with the Pro-Vice Chancellor of Science, Professor Wendy Lawson. The visit went well, and she was most impressed with the way things are looking the labs.



The visit of the VC Professor Cheryl De La Ray has been re-scheduled to the 5th of July. Sharlene will send some information shortly.

Last, but definitely not least, can you recognise the people in the photos? Richard, Owen and Greg have been at UC for 25 years. Watch out for an upcoming celebration!

Have a safe and enjoyable Easter!



Richard Hartshorn
Began at UC -01 December 1994



Owen Curnow
Began at UC -16 December 1993



Greg Russell
Began at UC -27 July 1994

SPCS Te Kura Matū Seminar Series -

No seminars during mid-semester break. Next seminar 1st May.

Time/Date	Speaker	Talk Title	Location
Wed, 01 May 2019 12:00:00 NZST	Prof Nigel Perry	Colour, Lasers and Light: Student "Studies of some New Zealand Natural Products"	Room 701, West Building

Health, Safety and Wellbeing



A Fortnight dedicated to Staff Wellbeing and Self-Care

It has been a stressful start to the year and that makes it more important than ever to take care of yourself.

So, for the fortnight of Monday 29 April to Friday 10 May, you will have the opportunity to attend some lunch time sessions on various topics around self-care for you and your family.

We encourage you to attend as many of the sessions as possible, which have been planned around lunch time.

Grab a drink, bring your lunch and prepare to learn and practice some techniques to enhance your wellbeing.

<https://blogs.canterbury.ac.nz/intercom/2019/04/10/a-fortnight-dedicated-to-staff-wellbeing-and-self-care/>

Vaccinations for UC staff

Vaccinations for UC staff
Measles, Mumps and Rubella (MMR) vaccinations are now available to all UC staff who have never been vaccinated, or have only had one MMR vaccination.
The annual flu shot is now available from the clinic at UC's Health Centre now, and free for all UC staff. Read more

Contact the UC Health Centre on (03) 369 4444

Organic Solvent Use

As a department we can get accustomed to using solvents and fail to recognise their dangers. We use fume cupboards to minimise the risks, but they are always present, especially working in other labs and when transporting chemicals

Please see this Worksafe alert concerning organic solvent use which relates to two worker deaths.

<https://worksafe.govt.nz/about-us/news-and-media/organic-solvents/>

Health and Safety Training

April 2019
Mon 15 April First Aid Revalidation

May 2019
Wed 1 May Risk Management
Wed 22 May First Aid Revalidation

June 2019
Tues 11 June First Aid Revalidation
Mon 24 June Field Activities

July 2019
Fri 12 July First Aid Revalidation
Fri 19 July Fire Extinguisher & Evacuation

The full list and information about registering for a course is on the [H&S intranet](#).

EAP NOW app

EAP Services Ltd has launched the EAP NOW app which benefits staff already using the Employee Assistance Programme (EAP), and those staff who want to know more about the services EAP can provide.

This initial release of the EAP NOW app provides information about EAP and/or to schedule and track EAP appointments.

EAP intends to further develop the app and will keep UC informed as new updates are available.



To download the EAP NOW app, scan the QR code on the [HR Intranet](#) or use either of the links below:

<https://www.eapservices.co.nz/mobile-app-for-android/>
<https://www.eapservices.co.nz/mobile-app-for-ios/>

After installing and opening the app, you will be required to register the first time you login:
Tap Register here (bottom right of your mobile)
Enter UC's organisation code: UCEAP
Enter an email address and password.



SPCS Staff Profile

Associate Professor Sarah Masters

I obtained my honours degree and PhD from the University of Edinburgh, (soon to be known as Peoples Independent State of) Scotland.

After a stint as a post-doc I was awarded a prestigious Royal Society of Edinburgh BP Research Fellowship to establish my independent career. I held this in Edinburgh and was able to do some teaching and gain experience of academia whilst also supervising a doctoral student. This provided invaluable experience and helped me to get the job here.

I moved to UC in January 2011, just in time for the earthquakes which I'd been reassured didn't happen in Christchurch. It also snowed heavily that year having been reassured that it never snows in Christchurch either!! I think I need a better source of data...

Anyway, I now wear various hats as part of my job:

- Director of PG Studies for Chemistry in the SPCS (and the then Department of Chemistry) since 2013
- President of the New Zealand Institute of Chemistry
- Chair of the NZIC2019 National conference (being held here in November, come to it!)

I also sit on the College of Science Research committee and used to be on the UC Scholarships and Postgraduate committees representing the interests of the College of Science and its wonderful postgraduate students.

Let's just not talk about the admin side of it all though.

When I went to my daughter's school and asked what chemists did, Isobel put up her hand and adamantly said "PAPERWORK!".... Oops. When I'm not doing paperwork I research molecular structure with my group using a technique called gas electron diffraction. We also use computational methods to augment our experimental data.

We have various projects on the go which I hope to tell you about soon as part of the staff SPCS seminar series.

I have two children (Imogen and Isobel) and a very large hairy dog called Ollie. To be blunt I don't get much time to myself what with running round after them but I do love horses. I show jumped to national level in the UK when I was a kid, and have recently returned to riding again. The photo is with George, who I did a show with recently and won some ribbons.



George and Sarah. The ribbon winning team!

Care packages for the Muslim community

NZ Gifts of Love and Strength are an approved local group who are collecting donations and distributing them directly to the Muslim community.

The things on the list change over time but as of 11th April they are especially asking for:

- Non-perishable food /Toiletries – (no tampons)
- Kiwiana – so they have a permanent New Zealand gift (candles, soaps, homewares, art, jewellery, books etc)
- New winter clothes, scarves etc
- Children's books/activities
- Vouchers assorted

Donation drop off at Entire Electrical, Unit 9/ 19 Nga Mahi Road, Sockburn, Christchurch

Monday to Friday 8.30 – 4.30 pm

Saturday and Sunday 10 – 3.00 pm

(please park in the middle car parks numbered 9 not in front of the building)

Facebook – [NZ Gifts of Love and Strength](#)

Email – giftsofloveandstrength@gmail.com

Bank Account for donations : (ASB)

NZ Gifts of Love and Strength – 12-3148-0093964-01



An international collaboration presents paradigm-shifting observations of the gargantuan black hole at the heart of distant galaxy Messier 87

The Event Horizon Telescope (EHT) — a planet-scale array of eight ground-based radio telescopes forged through international collaboration — was designed to capture images of a black hole. Today, in coordinated press conferences across the globe, EHT researchers reveal that they have succeeded, unveiling the first direct visual evidence of a supermassive black hole and its shadow.

Canterbury Distinguished Professor Roy Kerr's black hole theory proven right

Professor David Wiltshire has the full story on RNZ



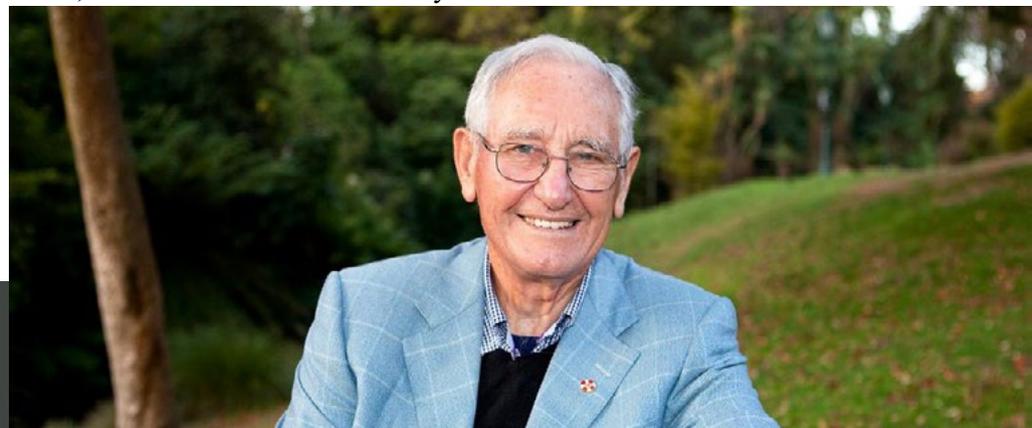
This breakthrough was announced today in a series of six papers published in a special issue of The Astrophysical Journal Letters. The image reveals the black hole at the center of Messier 87, a massive galaxy in the nearby Virgo galaxy cluster. This black hole resides 55 million light-years from Earth and has a mass 6.5 billion times that of the Sun .

The EHT links telescopes around the globe to form an Earth-sized virtual telescope with unprecedented sensitivity and resolution . The EHT is the result of years of international collaboration, and offers scientists a new way

to study the most extreme objects in the Universe predicted by Einstein's general relativity during the centennial year of the historic experiment that first confirmed the theory.

"We have taken the first picture of a black hole," said EHT project director Sheperd S. Doeleman of the Center for Astrophysics | Harvard & Smithsonian. "This is an extraordinary scientific feat accomplished by a team of more than 200 researchers."

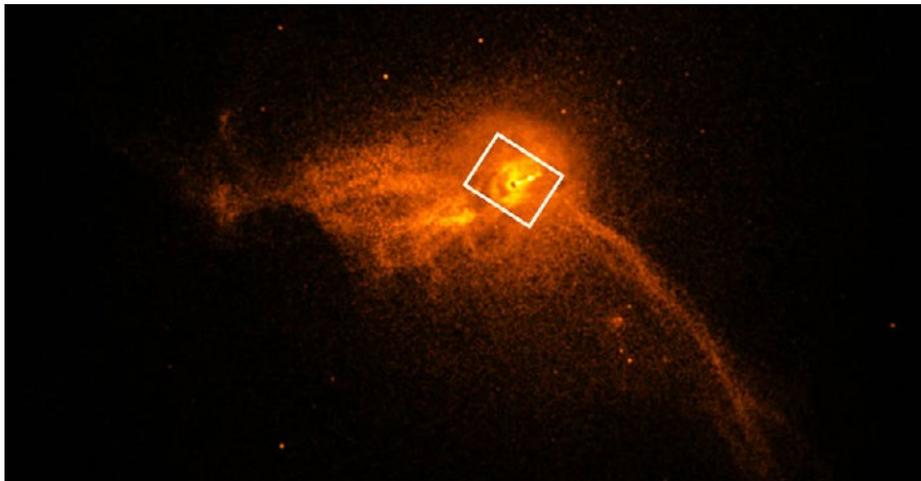
See the full article <https://eventhorizontelescope.org/>



The University of Canterbury's Canterbury Distinguished Professor Roy Kerr. Astronomers have captured the first image of a black hole, heralding a revolution in our understanding of the universe's most enigmatic objects, and proving the University of Canterbury's Canterbury Distinguished Professor Roy Kerr's 56-year-old solution correct.

Black Hole Image Makes History; NASA Telescopes Coordinated Observations

Elizabeth Landau- nasa.gov/



Chandra X-ray Observatory wide-field of the core of the M87 galaxy.

While NASA observations did not directly trace out the historic image, astronomers used data from NASA's Chandra and NuSTAR satellites to measure the X-ray brightness of M87's jet. Scientists used this information to compare their models of the jet and disk around the black hole with the EHT observations. Other insights may come as researchers continue to pore over these data.

There are many remaining questions about black holes that the coordinated NASA observations may help answer. Mysteries linger about why particles get such a huge energy boost around black holes, forming dramatic jets that surge away from the poles of black holes at nearly the speed of light. When material falls into the black hole, where does the energy go?

"X-rays help us connect what's happening to the particles near the event horizon with what we can measure with our telescopes," said Joey Neilsen, an astronomer at Villanova University in Pennsylvania, who led the Chandra and NuSTAR analysis on behalf of the EHT's Multiwavelength Working Group.

NASA space telescopes have previously studied a jet extending more than 1,000 light-years away from the center of M87. The jet is made of particles traveling near the speed of light, shooting out at

high energies from close to the event horizon. The EHT was designed in part to study the origin of this jet and others like it. A blob of matter in the jet called HST-1, discovered by Hubble astronomers in 1999, has undergone a mysterious cycle of brightening and dimming.

Chandra, NuSTAR, Swift and Fermi, as well as NASA's Neutron star Interior Composition Explorer (NICER) experiment on the International Space Station, also looked at the black hole at the center of our own Milky Way galaxy, called Sagittarius A*, in coordination with EHT.

Getting so many different telescopes on the ground and in space to all look toward the same celestial object is a huge undertaking in and of itself, scientists emphasize.

"Scheduling all of these coordinated observations was a really hard problem for both the EHT and the Chandra and NuSTAR mission planners," Neilsen said. "They did really incredible work to get us the data that we have, and we're exceedingly grateful."

Read more https://www.nasa.gov/mision_pages/chandra

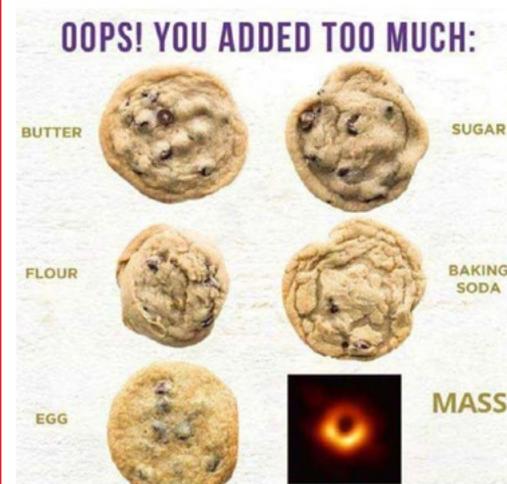
How much do you know about black holes?



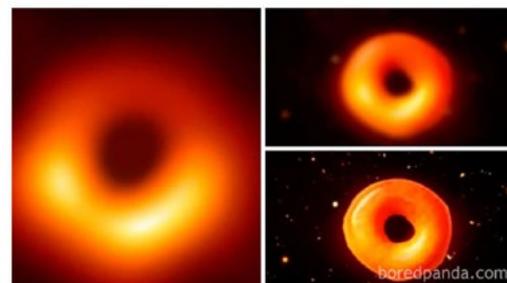
Take the black hole quiz here.

<https://www.space.com/15906-black-hole-quiz-facts.html>

A Black Hole walks into a bar...



New, improved image already available from Chile
(Homer Simpson is pleased)



Amber
@aschmugge

Finally remembered what that black hole photo reminds me of. #NotMyKittens

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