



The Official Newsletter of
the
**PAPAKURA RADIO
CLUB INC.**

June 2023



New callsigns to collect.



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This Month's Meeting:

Wednesday 7th of June will be the next meeting for 2023. Following general business, we will receive the NZART conference Report.

There will be a cuppa and biscuit afterwards so we can socialise, radios optional.

If transport is a problem, let the committee members know, and we may be able to assist with arranging a ride for you.

Dates: **Wednesday 7th June**
Wednesday 14th May
Wednesday 21st May
Wednesday 28th May

General Meeting + Conference Report
Activity Night - 2 metre basics & setups
Committee Meeting
Project Night – Flowerpot Antenna Building

CLUB ACTIVITY:

With the Streetfest and Ham Cram, now a memory, and conference over, we get the chance to catch up on the normal radio stuff that we get to do.

To help our new hams, we will be covering some basics, including building Flowerpot antennas and helping them get radios programmed and getting them on air.

So keep an ear out for some new callsigns, as they seek those first 50 contacts.

Also June 17 is the annual QRP day, This year it falls on a Saturday, and it's a perfect opportunity to get out with some field gear and try to activate a park with only QRP power levels, Maybe you can also turn down the power and see if we can make some QRP contacts on this day of low power – More info in the heard around the scenes section.

NOTICE OF SPECIAL GENERAL MEETING:

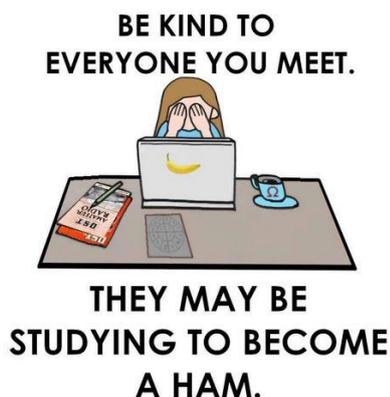
Notice is hereby given of a special General Meeting to be held at the ZL1VK clubrooms Wellington Park, 1 Great South Road, Papakura on Wednesday the 5th of July 2023.

The only item on the agenda is a number of small changes to the club constitution.

These changes are required for three reasons.

1. To change banking and signatory requirements from the days of cheques to facilitate modern internet banking
2. To include required wording to meet requirements of IRD to confirm the Not-for-Profit status of the club.
3. Minor changes to wording to bring the document language up to date, and clarify the position of life members.

Copies of the constitution changes will be circulated to all financial members prior to the meeting.



DX CALENDAR MAY 2023

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
EZ/DL7M		SA6G/7 Ven Island				T88PB						FP/KV1J																	
V47JA				8Q7KB						VP2V/W9DR																			
ZC4RH				7Q7WW																									
T31TT						YJ0CA																							
VU7W																													
D44DX D4CW																													
VP6A																													
5UA92WS																													
Z81D																													
TR8CR																													
VK0AW																													
FO/F6BCW																													
FH4VVK																													

Featured DX

FO/F6BCW HUAHINE ISLAND FRENCH POLYNESIA

Didier, F6BCW will be active from Huahine Island, IOTA OC - 067, French Polynesia, May - October 2023.

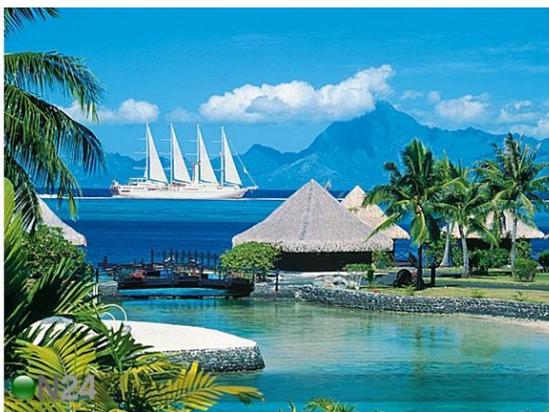
He will operate on 160 - 6m, CW, SSB.

QSL via F6BCW, LOTW.

Ads for direct QSL:

Didier CADOT, 180 rue du Moulin de la coudre - 71440, TRONCHY, FRANCE.

DXCC Country - French Polynesia.



UPCOMING CONTESTS

Start - Finish		Bands	Contest Name	Mode	Exchange	Sponsor's Website	
Date-Time	Date-Time						
1	1700	1	2100	28	NRAU 10m Activity Contest	CW,Ph,Dig RS(T), 6-char grid square	nrau.net/nrau-contests-in-general
1	2000	1	2200	1.8-28,50	SKCC Sprint Europe	CW RST, SPC, name, mbr or "none"	www.skccgroup.com
2	0000	4	2359	1.8-28,50	PODXS 070 Club 3 Day Weekend Contest	Dig Mbr or "0000"	www.podxs070.com
2	1900	2	1959	3.5,7	HA3NS Sprint Memorial Contest	CW RST, mbr or "NM"	radioamator.honlapepites.hu/?p=1280
3	0000	4	2359	28	10-10 Int'l Open Season PSK Contest	Dig Name, SPC, mbr	www.ten-ten.org
3	0200	3	1459	1.8-28	Tisza Cup CW Contest	CW RST, CQ zone	www.tiszacup.eu
3	0600	3	0800	7,14	Wake-Up! QRP Sprint	CW RST, serial, suffix of previous QSO	qrp.ru/contest/wakeup
3	1300	4	0100	1.8-28,50,144	Kentucky QSO Party	CW,Ph,Dig RS(T), KY county or SPC	www.kyqsoparty.org/rules
3	1300	4	1300	50	UKSMG Summer Contest	not specified RST, serial, 6-char grid square	uksmg.org/summer-contest-rules.php
3	1500	4	1459	1.8-28	IARU Region 1 Field Day, CW	CW RST, serial	www.darc.de
3	1500	4	1500	1.8-28	RSGB National Field Day	CW RST, serial	www.rsgbcc.org
3	1800	4	2359	1.8-28,50	ARRL Int'l Digital Contest	Dig (no RTTY) 4-char grid square	contests.arrl.org/dig
5	1900	5	2030	3.5	RSGB 80m Club Champ, Data	Dig RST, serial	www.rsgbcc.org
6	0100	6	0300	3.5-28	ARS Spartan Sprint	CW RST, SPC, pwr	arsqrp.blogspot.com
7	1700	7	2100	144	VHF-UHF FT8 Activity Contest	FT8 4-char grid square	www.ft8activity.eu
8	1900	8	2000	3.5,7	EACW Meeting	CW RST, nickname, mbr or DXCC prefix	www.eacwspain.es/eacwmeeting
10	0000	10	2359	1.8-28	VK Shires Contest	CW,Ph RS(T), VK shire, or CQ zone	www.wia.org.au
10	1100	10	1300	14,21	Asia-Pacific Sprint, SSB	Ph RS, serial	jsfc.org/apsprint/aprile.txt
10	1200	11	1200	3.5-28	Portugal Day Contest	CW,Ph RS(T), CT district or serial	portugaldaycontest.rep.pt/rules.php
10	1200	11	2359	1.8-28,50	SKCC Weekend Sprintathon	CW RST, SPC, name, mbr or "none"	www.skccgroup.com
10	1400	10	1800	144,432	AGCW VHF/UHF Contest	CW RST, serial, pwr, 6-char grid square	www.agcw.de/contest/vhf-uhf
10	1500	11	1500	3.5-28	GACW WWSA CW DX Contest	CW RST, CQ zone	gacw.ar
10	1600	11	1600	50	REF DDFM 6m Contest	CW,Ph RS(T), serial, 4-char grid square	concours.r-e-f.org
10	1800	12	0259	50 and up	ARRL June VHF Contest	CW,Ph,Dig 4-char grid square	www.arrl.org/june-vhf
11	0800	11	0900	80m	Straight Key Night	CW RST / Location / Name / Key / Transmitter / Power	New Zealand Straight Key Night Radio Event ZL1.NZ
11	1700	11	2200	All, no WARC	Cookie Crumble QRP Contest	CW,Ph,Dig RS(T), SPC, cookie number, name	w3atb.com/cookie-crumble
12	0000	12	0200	1.8-28	4 States QRP Group 2nd Sun Sprint	CW,Ph RS(T), SPC, mbr or pwr	www.4sqrp.com
14	0030	14	0230	3.5-14	NAQCC CW Sprint	CW RST, SPC, mbr or pwr	naqcc.info
14	1700	14	2100	432	VHF-UHF FT8 Activity Contest	FT8 4-char grid square	www.ft8activity.eu
14	1900	14	2030	3.5	RSGB 80m Club Champ, CW	CW RST, serial	www.rsgbcc.org
15	1900	15	2000	3.5-14	NTC QSO Party	CW Max 25 WPM: RST, mbr, or "NM"	pi4ntc.nl/ntcqrp
16	1200	16	1300	7	SARL Youth QSO Party	Ph RS, age	www.sarl.org.za
17	0000	17	2359	3.5-28	Pajajaran Bogor DX Contest	Ph RS, serial	pbdx-contest.com/rules
17	0000	18	2359	1.8-28	All Asian DX Contest, CW	CW RST, 2-digit age	www.jarl.org/English
17	0000	18	2359	50	SMIRK Contest	CW,Ph 4-char grid square, mbr (optional)	smirk.info/contest.html
17	1400	18	1400	50	IARU Region 1 50 MHz Contest	CW,Ph RS(T), serial, 6-char grid square	www.iaru-r1.org
17	1500	18	1500	1.8	Stew Perry Topband Challenge	CW 4-char grid square	smirk.info/contest.html
17	1600	18	0400	3.5-28	West Virginia QSO Party	CW,Ph,Dig RS(T), WV county or SPC	www.qsl.net/wvsarc
17	1800	17	1959	1.8-28,50	Feld Hell Sprint	Dig mbr, SPC, grid square	sites.google.com/site/feldhellclub/Home
18	0800	18	1400	50	WAB 50 MHz Phone	Ph RS, serial, WAB square or country	wab.intermip.net
21	0030	21	0230	3.5-14	NAQCC CW Sprint	CW RST, SPC, mbr or pwr	naqcc.info
21	1700	21	2100	1.2G	VHF-UHF FT8 Activity Contest	FT8 4-char grid square	www.ft8activity.eu
22	1900	22	2030	3.5	RSGB 80m Club Champ, SSB	Ph RS, serial	www.rsgbcc.org
24	0600	24	1700	3.5-28	UFT QRP Contest	CW RST, QRP/QRO, mbr or "NM"	www.uft.net/concours-qrp-uft
24	1200	25	1200	1.8-28	His Maj. King of Spain Contest, SSB	Ph RST, EA province or serial	concursos.ure.es
24	1800	25	2100	All, no WARC	ARRL Field Day	CW,Ph,Dig Number of transmitters, operating class, ARRL/RAC Section or "DX"	www.arrl.org/field-day
26	1900	26	2030	3.5-14	RSGB FT4 Contest	FT4 Signal report	www.rsgbcc.org/hf
28	0000	28	0200	1.8-28,50	SKCC Sprint	CW RST, SPC, name, mbr or "none"	www.skccgroup.com

Note: All dates and times are in UTC,

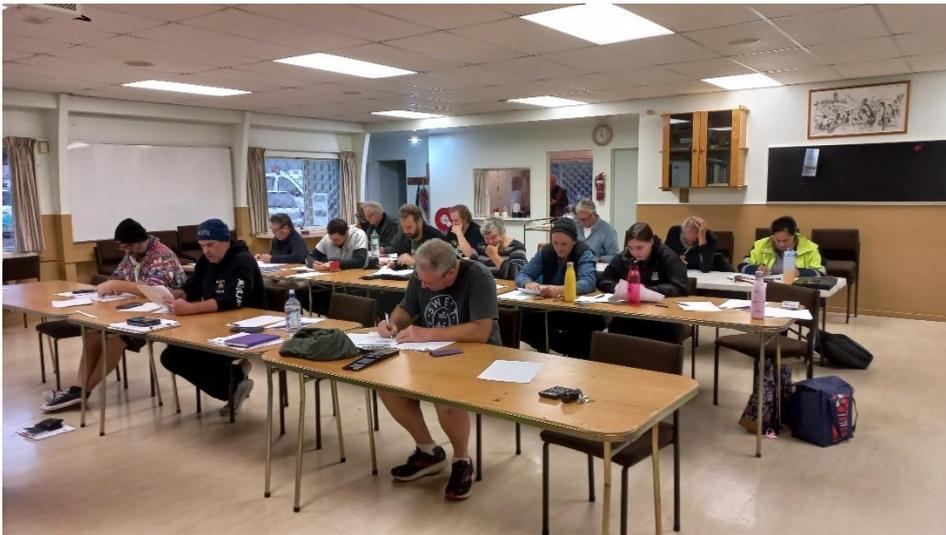
RAMBLINGS FROM THE EDITOR'S DESK

Yes, It's June, and we are now formally on the path to winter. The air temperatures are colder, especially in the mornings, and the rains are more frequent.

I always new this would be a busy month, we started with the Streetfest, which was swell supported by club members, and also well attended by members of the public, and a number of people expressed interest in knowing more. So with a month of booked Saturdays, Ann-Maree and I headed off for a quick escape, before committing to 2 weeks of ham crams.

Our short trip to Otorahanga, and the surrounding caves district, allowed us to visit some good walks, and finally enjoy a very overdue diner in Te Kuiti. Then back to Auckland and a truckload of paid work, as well as two Saturday Ham Crams.

The Ham crams were outstanding, we started with 19 enthusiastic volunteers, and in week 2 we dropped to 18. A huge congratulations to the 15 who passed the exam first time, and we look forward to seeing the remaining 3 complete when time and study permits. The determination showed when on week 2 we had a small power problem (a full outage) and a pillar box (yes, the one that feeds the club), burning out in the middle of a session. A big shout to Mel, who was on the course, for organising repairs to the supply cables, at the cost of missing some sessions. In addition, thanks to the students for putting up with my poorly drawn whiteboard markings. We were all very happy when power was restored, and we could continue with the PowerPoint slides again.



Again, congratulations to all who worked so hard to get that valuable license and call sign.

With the exams all done, and takeaways for dinner that night, I headed home to a well-deserved sleep, but Sunday had another surprise. As I had been in contact with a Covid case earlier in the week, I was testing each day to confirm that I was still covid free, but Sunday morning I woke with additional aches and a slight snuffle, but as the day progressed, so too did my symptoms, and Monday mornings test conformed that I was off for 7 days. So after promising that I'd help with programming Radios, I had to message everyone to apologise, and settle into my working from home model ... again.

This also meant that I had to isolate over the long weekend. But as a result, I got to spend the weekend catching up on some antenna repairs, Getting the vertical up and fixing my HF. In addition, I managed to work on my Go-Box and programme some additional radios. So hopefully I will be able to get out to some park activations, with the new toys & with some additional radios on the Ham Bands, also we will be able to get a few extra hams on air sooner.

Of course, this does not mean it was all plain sailing, being sick, even with minor symptoms, is still sick and you don't feel like working all the time, but even though I was on sick leave, that didn't stop the work from coming in. But I was certainly not working to my normal levels of performance. No doubt I'll be returning to a big pile of work waiting for my attention.

The problem with work, is that if you ignore it, even for good reasons, eventually you have to address it, and when you do get to it there is much more to address, if you just nibble away at it, you're more likely to get on top of it.

Another strange thing about workloads, is often you end up with a job, that, when all is said and done, was barely critical in the grand scheme of things, and while it was urgent, it was not important, meanwhile a different important thing was delayed. We call this the tyranny of the urgent. If we are to be successful in our workload, must identify these tasks, and keep them in the right place.



So there it is ... Easy.

But it's not really that simple ... Is it? I knew that my 80 Metre antenna needed work long before the winds came and damaged it. I knew that I needed to sort the yard before the flooding made it all a soggy mess, and now each item not only needs sorting, but it also needs cleaning. But where was my priority?

In this newsletter we are calling a special general meeting of the members, to discuss and hopefully confirm several changes to the constitution. As a committee we have needed to address these as our existing constitution, while perfectly acceptable, is showing its age, and changes to banking, changes to legislation, and even changes to language.

The changes simply needed to be made, they are not exciting or dramatic, they do not make the club any better or any worse, but they do align the document with the modern world, and allow the club to continue to operate until more changes are required by whatever circumstances trigger the next review.

The Important vs the Urgent. It's an ongoing battle to address the things that matter over the things that are demanding our attention right now. But if we are to succeed as a club, we must address change. Recognising the degree of change came to me as I programmed the radios, naturally as well as repeaters, I programmed a set of simplex channels, to make sure they were right I went to the NZART band plans and reviewed the general purpose FM frequencies, Assuming a standard 25kHz spacing between channels UHF gets 3 channels allocated for FM simplex + one calling channel. So 4 frequencies for FM simplex Of course, there are some unused Repeater slots we could use, but that not ideal either.

VHF fared a little better with 9 channels + 1 call channel. I know we have many more modes, and we need to avoid interference with other countries, but is FM now so dead that it's limited to so few simplex channels? Am I living with out-of-date modes of operation?

I mean I agree that we are spoiled for repeater choice ... Or are we? National System is off-air, at least for Auckland, and while we have 4-6 main repeaters to use (depending on location), the performance of a couple is ... well questionable at best. DMR is definitely taking advantage of this, but the cost of the radios (unless you have good line of site and can use a handheld) is prohibitive for those of us in the south, not well served by the Auckland repeater. D-Star is also an option, if you have the right radio. FM radios are cheap, and easy to use. IRLP allows us to access other repeaters and enjoy long range communication on the cheap.

Simplex allows us to challenge ourselves, and is used for SOTA, Parks and Lakes activations, and even contesting ... So is it really time for FM to be phased out? Has morse been Phased out yet?



Right now, we have 20 new members who are trying to get on air, and find their way into the hobby, as established hams, we have a pretty good idea how we started, and what we did to get on air, but like the constitution, the times have moved on, and we need to move with them. But getting them started will happen with FM radios. They will use the local repeaters, and they will learn to play with FM first.

Most will start with a low cost radio, Like a Baofeng or Puxing, some will be lucky and get a single band ex commercial, Like a Tait or Motorola, and they will slowly find their way around them, Then they will progress to a dual band, or maybe even a multiband radio, then finally they will get to HF.

They will be enthusiastic to learn, I should know I had them asking question during the Ham-cram, and they will be keen to try out the gear. They will make mistakes, but they will also make an effort.

My one question, is will they also find a mentor?

As I think back on my own journey, The gear was important, learning how to put my antennas was trial and error (more error than trial some days), but what kept me going, and learning was in part the speakers, sharing what they were learning, and also the ones who were willing to take the time to share what they were building or using, I learnt from the lesson that others were learning.

Then there were the rallies, or the fun runs, that gave me a chance to use the gear in simplex mode, I got to experiment with height and learnt to put up poles to give the antenna height, and found out about portable power sources, I even set up solar panels to keep everything working. It was being able to use the gear, that made it fun. And of course, there were the equipment sales, where I not only got gear, but met others who were learning too.

Parks and Lakes can also give a dimension to the hobby, but if someone isn't going to show you how to do it, then how likely is it that you will discover it by yourself?

Mentoring might seem like a complex word, but in reality, mentoring is only sharing our journey, and occasionally helping someone who happens to be walking the same path. It's not teaching, which is detached and isolated, and its not mothering, its just walking along the same path as we walk the same journey.

We have helped a new generation of hams to pass the exam, the next challenge is to get them transmitting, and making friends. There are many things that bring us to the hobby, but it's the people who keep us in it.

So this June, Let's make it a goal to encourage each other, to share what we love about the hobby, but above all, if you hear a new callsign, Lets try and give them an encouraging word.

Remember, at some time, Someone encouraged, and maybe even inspired you.

It's food for thought.

73 de ZL1NUX



insert brain here



by woodsy

insert brain here



by woodsy

THE MOST EVOLVED ANIMAL IS ...

I normally ignore most articles about evolutionary evidence, as it tends to be an uncomfortable topic for physicists and I'm no expert on macro-biology. But the last 2 months have been a hive of publications that I just could not resist having a look at.

The most recent came from a study based out of the Natural History museum of the UK, and attempts to show how the marsupials are the most evolved species on the planet (at least based on the placental changes during development). Add in some hypothetical benefits of being able to abandon the young in harsh conditions, and Voila ... Given time we might all evolve into Australians.

But at the same time another publication asks why is it that the pinnacle of evolution seems to be the crab? This process known as carcinization, seems to have happened to most species on the planet. According to the study ... *“Carcinization is an example of a phenomenon called convergent evolution, which is when different groups independently evolve the same traits. It's the same reason both bats and birds have wings. But intriguingly, the crab-like body plan has emerged many times among very closely related animals.”*

The study then goes on to discuss the evolutionary benefits of flat round body compared to the elongated crustacean, like the lobster or crayfish. But at last, they admit they don't know, but have lots of ideas. So, I guess if we hang around long enough, the Australians will all become crabbier.

But the final story, was the best. Apparently, the Indian government curriculum has been hijacked, and now has dropped “Foundational Topics” from the textbooks of 14-16 year olds. So what did they do? It seems series of changes to school science teaching have resulted in the deletion of the periodic table, explanations of evolution and discussions about the sustainable use of natural resources from the textbooks used by children aged 14–16. These were dropped during covid-19 to lighten workloads, but are becoming permanent due to benefits observed from a smaller syllabus.

The changes were made by the National Council of Educational Research and Training (NCERT), the government-funded but operationally autonomous body tasked with producing India's textbooks. NCERT says that ‘rationalization’ is needed when content overlaps with material covered elsewhere in the curriculum, or when it considers content to be irrelevant. Moreover, India's 2020 National Education Policy says that students need to become problem-solvers and critical thinkers, and it therefore advocates less memorization of content and more active learning.

NCERT also wants “a rootedness and pride in India, and its rich, diverse, ancient and modern culture and knowledge systems and traditions”. India is not the only postcolonial country grappling with the question of how to honour and recognize older or Indigenous forms of knowledge in its school curricula. New Zealand is trialling the teaching of Māori ‘ways of knowing’ — mātauranga Māori — in a selection of schools across the country, yet no one is complaining. But I wonder, if the material is already covered in other textbooks, why does it have to be covered twice? If we are trying to encourage thinking, how much “Fact” needs to be taught as an actual foundation? or is it a case of I had to learn it, so it must be critical? Maybe we would be wise to try to understand what is happening before publishing in detail our opinions.

Time will tell if either of our respective experiments are a success, or failure.

But as an educator, it makes me wonder if everything we teach our students is actually critical, or just information. In the end, I don't have the answer ... except, The most evolved animal is not the human race...

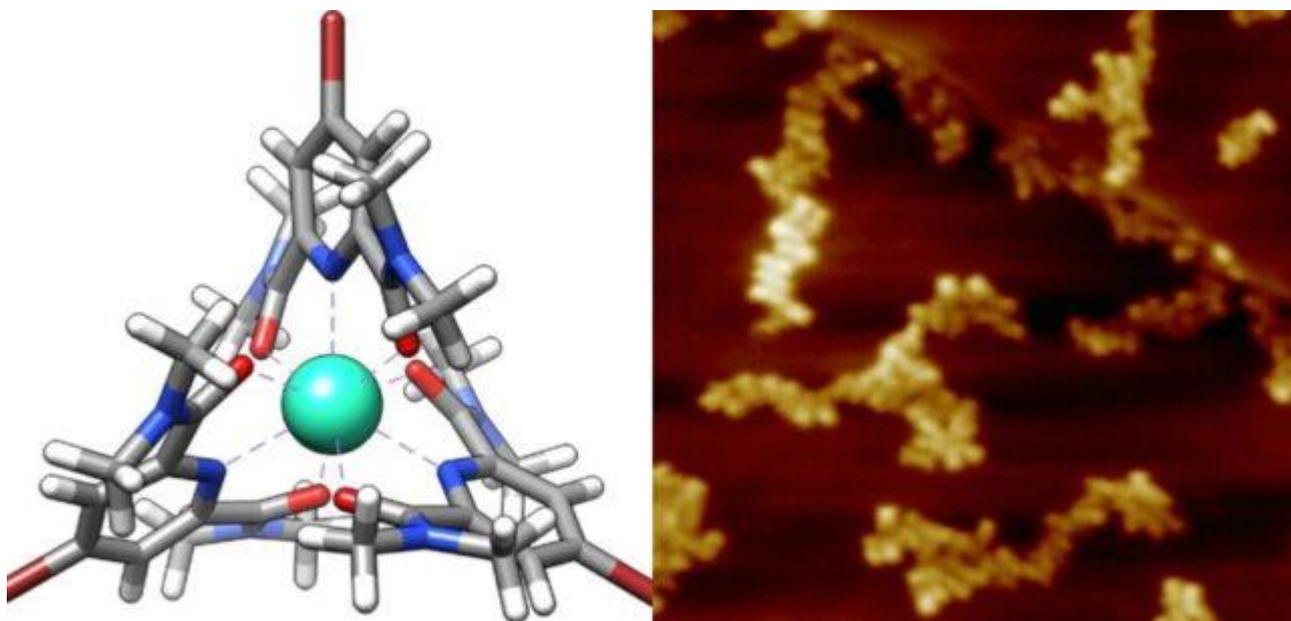
AN X-RAY OF A SINGLE ATOM?

Most x-rays are used to examine internal structures, ie bones, but scientists have used X-rays to characterize the properties of a single atom, showing that this technique can be used to understand matter at the level of its tiniest building blocks.

X-rays are considered a suitable probe for the characterization of materials on an atomic level because their wavelength distribution is comparable to an atom's size.

By combining x-ray scanning, with a microscopy technique for atomic-scale imaging called scanning tunnelling microscopy. They developed a technique that allowed them to determine that state of an atom, by measuring the electron current, this is because, at very close proximities (like, half a nanometre), the precise position of an electron is uncertain, smearing it across the space between the material and the probe; the state of the atom can then be measured in the resulting current.

Together, the two techniques are known as synchrotron X-ray scanning tunneling microscopy (SX-STM). The amplified X-radiation excites the sample, and the needle-like detector collects the resulting photoelectrons. And it's an exciting technique that opens up some pretty incredible possibilities.



Left: Schematic of the terbium supramolecular assembly, with terbium in cyan, bromine in blue, and oxygen in red. Left: SX-STM image of the terbium supramolecular assemblies. (Ajayi et al., Nature, 2023)

"Our work," the researchers write, "connects synchrotron X-rays with a quantum tunnelling process and opens future X-rays experiments for simultaneous characterizations of elemental and chemical properties of materials at the ultimate single-atom limit." The research has been published in Nature.

So next time you get an x—ray, who knows, maybe they will be able to see the chemical nature of your bones at the atomic level ... or maybe it may take a while longer.

But pretty cool stuff

THE FIRST WOODEN TRANSISTOR?

Wood is good for a lot of things. Building boxes, boats, and bookcases, for instance. Making tools, or campfires. Feeding termites. ... You'll note powering functional electrical appliances isn't among them.

Researchers at Linköping University and the KTH Royal Institute of Technology in Sweden clearly never paid much attention to lists of things wood is bad at, so they went ahead and made the world's first wooden transistor.

To be upfront, the team behind the innovation added a special ingredient to get around the whole issue of wood being so lousy at conducting a current. And while it works, don't expect to find one inside your next smartphone.

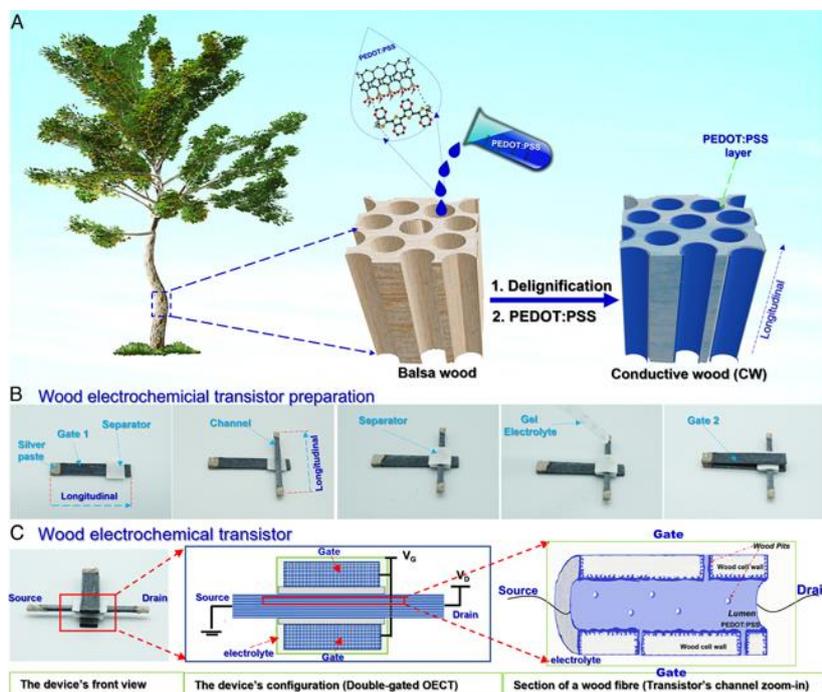
"Yes, the wood transistor is slow and bulky, but it does work and has huge development potential," says electrical engineer Isak Engquist from Linköping University.

The humble transistor is a fundamental component in just about any piece of electronic technology. Functioning as a tiny 'gate' that controls the flow of one current through the application of another, it can amplify signals, store data as a string of switches, or work together to carry out logic operations.

It can do all of this thanks to a property of semiconductive materials that permits them to carry a current only when they themselves have enough of a charge.

Where the first transistors were lumpy objects you could maybe balance on a fingertip, they've since been constructed on a scale that crams tens of billions into the same space.

But wood is not a semi-conductor, Unless of course you first burn it, and collect the carbon, or dry it to be an insulator, and wet it to make a conductor, ... Hardly Inspiring as a electrical conductor.



Using the hardwood balsa for its relatively high strength, low density, and homogenous structure, Engquist and his team stripped it free of its tough lignin and filled the remaining material with a mixed electron-ion conducting polymer called poly(3,4-ethylenedioxythiophene)–polystyrene sulfonate, or PEDOT:PSS.

If we're being technical, the wood acts more as a housing for the conductive material, like a messy bundle of wires. And ... If you're really being technical, It's a form of FET, rather than a transistor.

By stacking millimeter-thick units that operated as electrodes and channels, the team found they could create a rather crude Field Effect Transistor. With no voltage, the entire structure can be considered open and the switch set in the 'on' position. Pump in 6 volts, and the channel fills with electrons, slowly squeezing the channel shut and flicking the switch into the 'off' position.

Turning the wooden device off takes around 1 second while returning it to the on position takes roughly 5 seconds. Considering the transistors in your computer operate at speeds measured in gigahertz – flicking on and off hundreds of billions of times a second – you can forget cobbling together enough sticks to operate on the HF bands.

So what is the point, you ask?

"We didn't create the wood transistor with any specific application in mind," says Engquist. "We did it because we could."

Biodegradable electronics made from easily harvested resources could be used in remote sensors that need to break down easily or inconspicuous devices powered by movements in the environment. These are just a few more things wood could be rather good for. This research was published in PNAS.



In the meantime the car on the left rides on a 1986 Toyota truck frame and gets power from a Chrysler 318 engine. It is driven by an automatic transmission and has merely 1,800 miles on its speedometer. The whole body is made of cedar and its interior is just as over-the-top as the exterior.

The vehicle on the right was made by Liu Fulon. The Shengyang, China resident recently finished his own wooden electric car after four months of work, despite having no formal training in automotive design. Liu can get around at a respectable 30MPH (faster than his previous 20MPH project), and he factored in crucial elements like lights, mirrors and spare tires. Is this safe? Probably not, but it's proof that you don't need to be a wealthy entrepreneur to build your own eco-friendly ride.

... Well there goes the dad joke about wooden car that wooden go

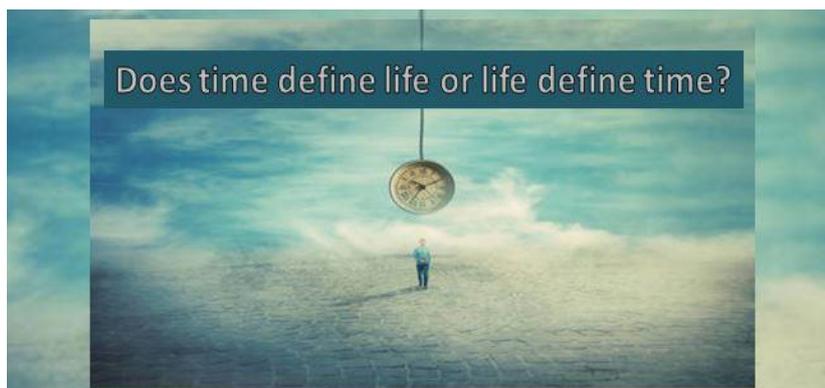
PHYSICS MAY HAVE SOLVED THE PROBLEM OF LIFE, ALL WE NEED IS A WHOLE NEW CONCEPT OF TIME

A timeless universe is hard to imagine, because imagining timelessness requires time to pass. Even when you try to imagine its absence, you sense it moving as your thoughts shift and images, sounds and smells move around you. The thing that is time never seems to stop. You may even feel woven into its ever-moving fabric as you experience the Universe coming together and apart. But is that how time really works?

According to Albert Einstein, our experience of the past, present and future is nothing more than ‘a stubbornly persistent illusion’. According to Isaac Newton, time is nothing more than backdrop, outside of life. And according to the laws of thermodynamics, time is nothing more than entropy and heat. In the history of modern physics, there has never been a widely accepted theory in which a moving, directional sense of time is fundamental.

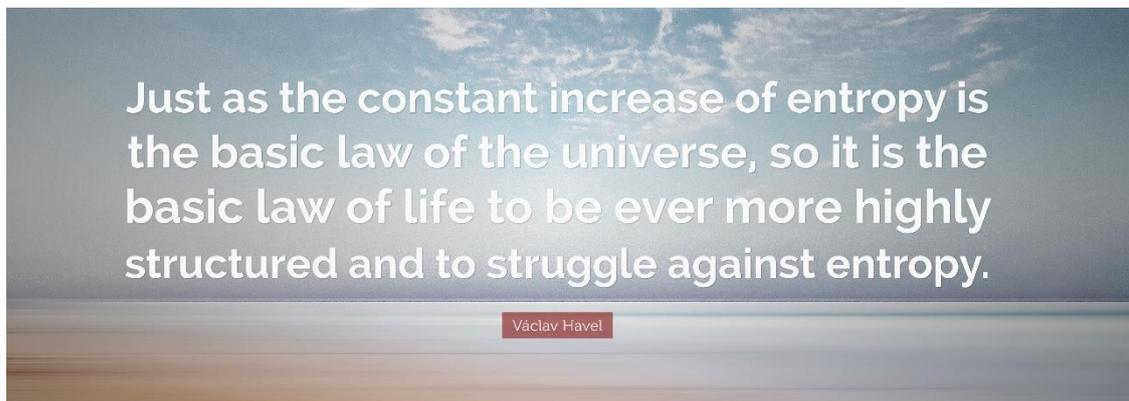
However, recent research across a variety of fields suggests that the movement of time might be more important than most physicists had once assumed.

A new form of physics called assembly theory suggests that a moving, directional sense of time is real and fundamental. It suggests that the complex objects in our Universe that have been made by life, including microbes, computers and cities, do not exist outside of time: they are impossible without the movement of time. From this perspective, the passing of time is not only intrinsic to the evolution of life or our experience of the Universe. It is also the ever-moving material fabric of the Universe itself. In assembly theory, time is an object. It has a physical size, like space. And it can be measured at a molecular level in laboratories.



For Newton, time was fixed. In his laws of motion and gravity, which describe how objects change their position in space, time is an absolute backdrop. Newtonian time passes, but never changes. And it's a view of time that endures in modern physics – even in the wave functions of quantum mechanics time is a backdrop, not a fundamental feature. For Einstein, however, time was not absolute. It was relative to each observer. He described our experience of time passing as ‘a stubbornly persistent illusion’. Einsteinian time is what is measured by the ticking of clocks; space is measured by the ticks on rulers that record distances. By studying the relative motions of ticking clocks and ticks on rulers, Einstein was able to combine the concepts of how we measure both space and time into a unified structure we now call ‘spacetime’. In this structure, space is infinite and all points exist at once. But time, as Einstein described it, also has this property, which means that all times – past, present and future – are equally real. The result is sometimes called a ‘block universe’, which contains everything that has and will happen in space and time.

Ironically the thing that cracked our concept of time, was the invention of the engine. Though engines could be mechanically reproduced, physicists didn't know exactly how they functioned. Newtonian mechanics were reversible; engines were not. Newton's solar system ran equally well moving forward or backward in time. However, if you drove a car and it ran out of fuel, you could not run the engine in reverse, take back the heat that was generated, and unburn the fuel. Physicists at the time suspected that engines must be adhering to certain laws, even if those laws were unknown. What they found was that engines do not function unless time passes and has a direction. By exploiting differences in temperature, engines drive the movement of heat from warm parts to cold parts. As time moves forward, the temperature difference diminishes and less 'work' can be done. This is the essence of the second law of thermodynamics (also known as the law of entropy). The law describes the way that less useful 'work' can be done by an engine over time. You must occasionally refuel your car, and entropy must always increase.



The "times" of physics and of evolution are incompatible. But this has not always been obvious because physics and evolution deal with different kinds of objects. Physics, particularly quantum mechanics, deals with simple and elementary objects: quarks, leptons and force carrier particles of the Standard Model. Because these objects are considered simple, they do not require 'memory' for the Universe to make them (assuming sufficient energy and resources are available). Think of 'memory' as a way to describe the recording of actions or processes that are needed to build a given object. When we get to the disciplines that engage with evolution, such as chemistry and biology, we find objects that are too complex to be produced in abundance instantaneously (even when energy and materials are available). They require memory, accumulated over time, to be produced. As Darwin understood, some objects can come into existence only through evolution and the selection of certain 'recordings' from memory to make them.

This incompatibility creates a set of problems that can be solved only by making a radical departure from the current ways that physics approaches time – especially if we want to explain life. These and other problems led us to develop a new way of thinking about the physics of time, which we have called assembly theory. It describes how much memory must exist for a molecule or combination of molecules – the objects that life is made from – to come into existence. In assembly theory, this memory is measured across time as a feature of a molecule by focusing on the minimum memory required for that molecule (or molecules) to come into existence.

Consider the macromolecular proteins that living things use as catalysts within cells. These proteins are made from smaller molecular building blocks called amino acids, which combine to form long chains typically between 50 and 2,000 amino acids long. If every possible 100-amino-acid-long protein was assembled from the 20 most common amino acids that form proteins, the result would not just fill our Universe but 10^{23} universes.

In fact, our universe would not contain enough matter to create all the possible variations. This makes physicists uncomfortable with random chance evolution. It's not impossible for all the oxygen molecules in a room to suddenly move to a corner of the room, suffocating all of the occupants of a building, Its just very, very, unlikely. Its not impossible to randomly create living molecular life, Its just very, very, unlikely.

However in assembly theory, objects grow in their complexity over time through the process of selection. As objects become more complex, their unique parts will increase, which means local memory must also increase. This 'local memory' is the causal chain of events in how the object is first 'discovered' by selection and then created in multiple copies. For example, in research into the origin of life, chemists study how molecules come together to become living organisms. For a chemical system to spontaneously emerge as 'life', it must self-replicate by forming, or catalysing, self-sustaining networks of chemical reactions. But how does the chemical system 'know' which combinations to make? We can see 'local memory' in action in these networks of molecules that have 'learned' to chemically bind together in certain ways. As the memory requirements increase, the probability that an object was produced by chance drops to zero because the number of alternative combinations that weren't selected is just too high.



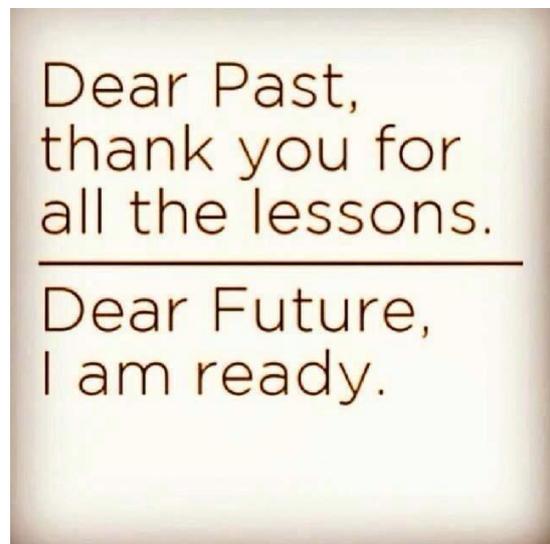
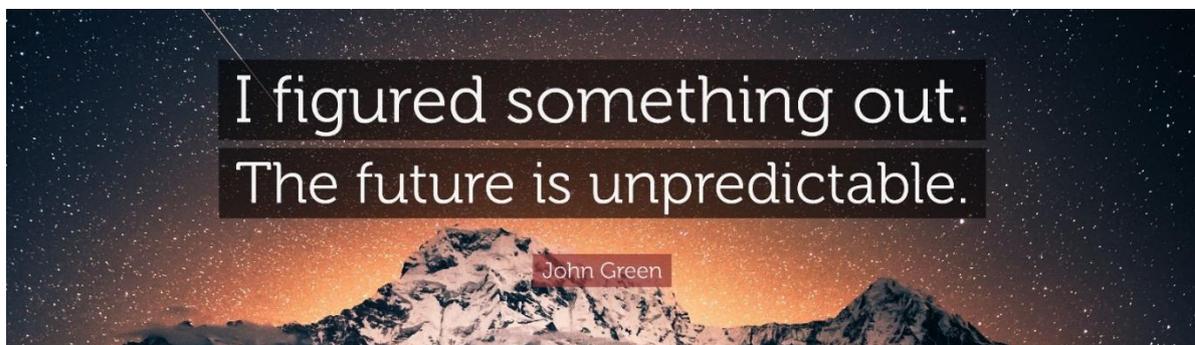
But what about complex objects that occur naturally without selection or evolution? What about snowflakes, minerals and complex storm systems? Unlike objects generated by evolution and selection, these do not need to be explained through their 'depth in time'. Though individually complex, they do not have a high Assembly value because they form randomly and require no memory to be produced. They have a low copy number because they never exist in identical copies. No two snowflakes are alike, and the same goes for minerals and storm systems.



This new conception of time might solve many open problems in fundamental physics. The first and foremost is the debate between determinism and contingency. Einstein famously said that God ‘does not play dice’, and many physicists are still forced to conclude that determinism holds, and our future is closed. But the idea that the initial conditions of the Universe, or any process, determine the future has always been a problem. In assembly theory, the future is determined, but not until it happens. If what exists now determines the future, and what exists now is larger and more information-rich than it was in the past, then the possible futures also grow larger as objects become more complex. This is because there is more history existing in the present from which to assemble novel future states. Treating time as a material property of the objects it creates allows novelty to be generated in the future.

If assembly theory is on the right track, it suggests time is fundamental. It suggests change is not measured by clocks but is encoded in chains of events that produce complex molecules with different depths in time. Assembled from local memory in the vastness of combinatorial space, these objects record the past, act in the present, and determine the future. This means the Universe is expanding in time, not space – or perhaps space emerges from time, as many current proposals seeking a solution to quantum gravity suggest. Though the Universe may be entirely deterministic, its expansion in time implies that the future cannot be fully predicted, even in principle. The future of the Universe is more open-ended than we could have predicted.

And that might not be a bad thing, Given enough time ... Whatever that turns out to be.



HEARD AROUND THE SCENES

NZ STRAIGHT KEY NIGHT

New Zealand Straight Key Night (Winter Edition) will be held on Sunday 11 June from 8pm to 9pm NZT on 80 metres.

SKN honours the original amateur radio mode in an easy-going style. Operators send signal report, name, location, type of key, type of transmitter and power output. Stations are limited to 100W output power.

SKN is not a contest - but the operator who gets the most votes for the quality of their sending will win the Bruce Scahill Best Fist Award. This certificate honours Bruce ZL1BWG, a dedicated supporter of SKN, who died last December.

Due to popular demand, this SKN will see the return of the QSY Rule. Any station that calls CQ must QSY after making a contact. This will keep everyone on their toes!

Full details about SKN are available at <https://z11.nz/skn> or you can email neil@z11.nz or call ZL1NZ during or after the NZ Net.

SKN is open to all straight key operators, regardless of skill level or speed. I hope to work you on 11 June!

Neil ZL1NZ, SKN Manager



2023 QRP DAY (JUNE 17)

The interest in QRP activities is everlasting in amateur radio community worldwide. QRP radio communications testify high ability of radio amateurs, and offers advantages concerning, among others, the reduction of QRM on the amateur bands.

The 10th IARU Region 3 Conference held in September 1997 in Beijing has resolved the following recommendations based on the document (97/X/14) submitted by NZART, which says;

"That Region 3 Societies help to promote the IARU objectives for QRP operation, specifically:

- I. to support QRP operation on June 17 each year;
- II. to foster QRP activities by their members;
- III. to encourage regular publication of QRP articles in their national magazines;
- IV. to provide QRP sections in any national contests; and v) to assist other Societies with the promotion and development of QRP."

Accordingly, member Societies are requested to note the above resolution and take appropriate actions with reference to the holdings of the following events, for example, in order to contribute to more effective use of radio spectrum:

Note that Japanese operators cannot use the Q code as a suffix. So JA stations will be identified with /VLP (very low Power)

Since QRP day falls on a Saturday this year, it's a good chance to look at a club activity.

So let's get out and have a go at Low power operation on the HF spectrum



"Sorry OM, I can only work QRP at the moment!"

WHANGAREI AMATEUR RADIO CLUB ANNUAL USED EQUIPMENT SALE:

To be held at Whangarei Branch Clubrooms, Heritage Park Whangarei on Saturday 23 July 2023

- Doors open for sellers at 9am and buyers at 10am
- sausages, sandwiches, cakes, tea and coffee on sale
- Auckland VHF group will be attending with a selection from their trading table.
- A large amount of good gear including electronic components will be on offer.
- Bookings for a (900mm) sales table at \$10 available contact Paul ZL1PC 021 926 952

NB There will be a sit-down hamburger meal at 5pm. Make your own with supplied ingredients. \$6 each. BYO drinks.

Names to Rose Deverell ZL1WRD please.

RWB Communications master agents for Icom, will be attending too. We look forward to seeing you at this friendly social event. You might even find a bargain to add to your existing collection!



If at first you don't succeed,
then skydiving definitely
isn't for you.



It was a calculated risk, but boy
do I suck at math

THE NEXT OFFICIAL BROADCAST WILL BE HELD SUNDAY 25TH JUNE 2023.

It will be rebroadcast in the Auckland area on the 6625 Repeater



2023 IARU HF WORLD CHAMPIONSHIP CONTEST (JULY)

The 2023 IARU HF World Championship Contest takes place the second full weekend of July, beginning 1200 UTC Saturday and ending 1200 UTC Sunday (8-9 July 2023). Both Single and Multi operator stations may operate the entire 24-hour period.

All licensed amateurs worldwide are eligible to participate in this contest.

The objective of this contest is to contact as many other amateurs as possible, especially IARU member society HQ stations, around the world using the 160, 80, 40, 20, 15 and 10 meter bands.

Multipliers are the total number of ITU zones plus IARU member society HQ stations worked on each band (not mode).

Thus, your Society's HQ stations participation is very important for the multipliers.

IARU officials represent a maximum of four multipliers per band (AC, R1, R2 and R3).

Our two regional AC members have the option of using "AC" or our regional designator "R3".

Regional EC members who are not AC members must use our designator "R3".

You can find the complete rules at; <http://www.arrl.org/iaru-hf-world-championship>

Enjoy and good luck!



I don't always bark,
but when I do,
it's for no reason.

SOME NETS – FOR WHEN YOU ARE LOOKING FOR SOME COMPANY

Day	Time (Local)	Freq (MHz)	Group
Sunday	08:00	3.750	Southern Net
	09:00	3.700	Bch 10. Franklin.
	09:15	3.755	Bch 65. Papakura.
	19:00	146.700	YL Net
	20:00	3.710	Bch 42. Titahi Bay
	21:30	3.595	Duran WIA Net.
Monday	19:30	3.757	Bch 12. Hamilton
	20:00	3.540	CW Practice Net
	20:00	3.605	Br 80. Hibiscus Coast
	20:00	Nat System	W.A.R.O
	20:30	3.870	O.T.C (Old Timers Club)
Tuesday	09:00	7.096	Ex Post Office Techs
	21:00	1.850	160m Net _ Ron ZL4JMF
	19:30	3.690	QRP ZL2BH
	20:00	3.581	CW improvers Net
Wednesday	11:30	3.850	SPAM Net
	20:00	3.660	Geek Net
	20:00	3.645	Bch 02. Auckland
	20:00	3.745	Bch 84. Bay of Islands
	20:30	146.525	W.R.S.C
Thursday	09:00	7.096	Ex Post Office Techs
	19:30	3.690	QRP ZL2BH
	20:00	3.540	CW Practice Net
	20:00	3.615	Bch 89. REG Net
	20:30	3.696	ZL10A
	20:30	3.666	LF Net ZL2CA
	20:00	3.690	ZL QRP SSB Net
Friday	20:30	3.850	SPAM (AM Mode)
	20:30	3.650	W.S.R.C.
	20:30	3.560	Digital Modes Net
Saturday	10:30	28.530	10-10 Down Under
	19:30	3.650	Christian Fellowship
	20:00	3.760	???
	20:30	3.600	Ch 62. Reefton/Buller
Daily or Other	07:30	3.696	ZL20A
	08:30	3.730	ZL3RP
	15:00	14.300	Pacific Seafarers
	17:30	3.760	Home Brew
	05:00 Zulu	14.183	ANZA DX Net
	18:00	7.115	VK7OB
	19:30	3.720	ZL1MO
	18:30	3.766	ZL3LE
	08:30/20:00	3.730	ZL3RP
	20:30	3.725	ZL2HN / ZL4RF
	21:00	3.677	Counties Net ZL2MA
	21:00	3.535	New Zealand Net (CW)

This is designed to be a living list, Please update whenever you are able:

Papakura Radio Club Inc.
Branch 65 NZART Club Directory 2017
Wellington Park, 1 Great South Road.
PO BOX 72-397 Papakura 2244
PHONE 09 296 5244
Westpac 03-0399-0019896-00

Club website: <http://www.qsl.net/zl1vk> Club email: zl1vk.club@gmail.com

President	ZL1NUX	Gavin Denby	021 459 192
Vice President	ZL1BNQ	Richard Gamble	021 729 270
Secretary	ZL1AOX	Ian Ashley	021 198 1810
Treasurer	ZL1MR	David Wilkins	021 185 7903
Committee	ZL1DK	David Karrasch	021 560 180
	ZL1IRC	Ian Clifford	021 082 48400
	ZL1RJS	Rob Stokes	021 307 005
	ZL1RIC	Ricky Hodge	027 533 8155
	ZL4MDE	Mike Enderby	021 529 895
	AREC Section Leader	ZL1BNQ	Richard Gamble
CD Liaison	ZL1AOX	Ian Ashley	021 198 1810
Newsletter Editor	ZL1NUX	Gavin Denby	021 459 192
Hall Custodian	ZL1AOX	Ian Ashley	021 198 1810
Newsletter.	Contact:	zl1nux@outlook.com	

Our newsletter is published monthly and normally distributed just before the club meeting. Please forward articles etc to the editor Wednesday 1 week before the general meeting. Please notify any change of address. Including E-Mail Address to the secretary.

Meetings

General Meetings are held at the Clubrooms on the 1st Wednesday of each month, starting at 7.30 pm. Look at your calendar and mark these nights. The speaker follows the General Meeting.

Project Evenings are on the 4th Wednesday of each month.

Committee Meetings are held on the 3rd Wednesday of each month at 7.30 pm unless advised.

Activity Nights are held on the 2nd Wednesday starting at 7.30 pm.

AREC Meetings are on the 5th Wednesday night, also starting at 7.30 pm

AGM: Held in November

Subscription: Full membership and newsletter \$25.00 Family Membership and newsletter \$40.00

Bank Account number: 03-0399-0019896-00 Working Bees As required.

Branch 65 21 Award: For contacts with ZL1VK (5 Points) and 8 Papakura Radio Club Members (2 Points each) after January 2011. Total 21 Points. Cost \$5-00. Certified list and \$5-00 to Secretary, Papakura Radio Club. Address above.

ZL1VK Club Nets

146.625 MHz Sunday at 8.30 am. Controller ZL1NUX, Gavin Denby. If the repeater is not available, listen 146.475MHz simplex.

3.755 MHz Sunday at 9.15 am. Controller ZL1BNQ Richard Gamble. (Linked to 146.675 & 438.775)