The Official Newsletter of the

# PAPAKURA RADIO CLUB INC.



May 2022

Two tired eyes are sleeping, Two willing hands are still. For one who suffered far too much, Is resting in God's will. You never said goodbye to us, Perhaps its just as well, We never could have said goodbye, To one we loved so well.



In Memory of those we have lost





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### This Month's Meetings:

Wed 4 May – General Meeting – All-Star Network – Rob ZL1RJS
Wed 11 May – Project Night
Wed 18 May – Committee Meeting
Wed 25 May – Activity Night

Also starting this month, we will be trialling a Thursday meeting schedule starting at 11:00 and finishing around 13:00, Hopefully this may appeal to members who may not find getting to the rooms at night so easy

## CLUB ACTIVITY:

There will be a general meeting at the clubrooms on Wednesday the 4<sup>th</sup>,. And we will be returning to project nights on the 2<sup>nd</sup> and 4<sup>th</sup> Wednesday, We hope to restart the Arduino course from scratch, so dig out the old kit, and let get back to some programming and building activities with Arduino

We are also trialling a day meeting at the clubrooms on Thursdays theses will start at 10:00 am.

### **UPCOMING ACTIVITIES:**

WED 6 MAY – GENERAL MEETING WED 13 MAY – PROJECT NIGHT – ARDUINO TRAINING WED 20 MAY – COMMITTEE MEETING WED 27 MAY – ACTIVITY NIGHT – TO BE CONFIRMED THURSDAYS 10:00 AM DAY MEETINGS

AS THESE ARE SUBJECT TO CHANGE - PLEASE LISTEN FOR UPDATES ON THE SUNDAY MORNING CLUB NETS. (SEE BACK PAGE FOR FREQUENCIES AND TIMES)



Experimentation is part of the Ham Radio DNA

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### DX Calendar May 2022



#### FEATURED EXPEDITION:

#### JX/LB4MI Olonkin Jan Mayen

Helge, JX/LB4MI will be active from Olonkin, Jan Mayen Island, IOTA EU - 022, until October 2022.

He will operate on HF Bands, SSB, CW

Sunrise 04-30-2022 at 02:44 GMT sunset at 22:16 GMT

For information on other expeditions, click the link in the calendar above, or check out







Papakura Radio Club Inc.

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### CONTESTS MAY 2022

Date-	I	Date-	Bands	Contest	Mode	Exchange	Sponsor's Website
1 13	nd 1	1900	3 5-28	AGCW ORP/ORP	CW	RST serial class (A/B)	agew.de/contest/grp.grp
2 00		2 010	1.8-28	K1USN Slow Speed	CW	Name SPC (max 20 WPM)	www.k1usn.com/sst.html
2 16	302	1729	3.5.7	OK1WC Memorial	CW	RST	memorial-ok1wc cz
3 010	3	3 015	1.8-50	Worldwide Sideband Activity	Ph	RS	wwsac.com/rules.html
3 010	3	3 0300	3.5-28	ARS Spartan	CW	RST SPC	arsgrp.blogspot.com
3 17	003	3 1900	3.5-14	RTTYops	Dia	Other's call your call serial name	rttvops.com
4 12	004	1300	1.8-28	A1Club	CŴ	RST	a1club.org/contest/awt
4 13	)(4	1400	1.8-28	CWops Test	CW	Name mbr or SPC	cwops.org/cwops-tests
4 17	)(4	2000	144	VHF-UHF FT8 Activity	FT8	4-char grid square	ft8activity.eu/index.php/en
4 19	)(4	2000	1.8-28	CWops Test	CW	Name mbr or SPC	cwops.org/cwops-tests
4 23	0(5	6 0300	All	MIE 33	CW Ph	RS(T)	www.ztv.ne.jp/isoda/33/
				Contest		age	annual/44/44rule-e.html
5 00	006	6 0300	7	Walk for the Bacon QRP	CW	RST SPC name mbr or power (<13	qrpcontest.com/pigwalk40
5 03	005	0400	1.8-28	CWops Test	CW	Name mbr or SPC	cwops.org/cwops-tests
5 07		1000	1.8-28		Dia	Name mbr or SPC	cwops.org/cwops-tests
5 10		1900	3.5-14	NDALL 10 Motor Activity		Other's call your call senal name	rttyops.com
5 10		2200	20	FACW	CWFILL	PST mbr name EA province or	nincontest.no/index.php/inn-contests
5 20		2000	1.8-50	SKCC Sprint	CW	RST SPC name mbr or	skeedroup com
6 01/	6	\$ 0215	1.0-30		Dia	Serial name	ncccsprint com
6 02	30 6	6 0300	1.8-21	NCCC	CW	Serial name	ncccsprint.com
6 20	206	3 2100	1.8-28	K1USN Slow Speed	CW	Name SPC (max 20 WPM)	www.k1usn.com/sst.html
7 03	007	0859	3.5-28	RCC	CW Ph	RS(T) mbr or ITU	rcccup.ru
7 12	3 00	3 11 5	3.5-28	ARI International DX	Ph CW D	RS(T) 2-letter Italian province or	www.ari.it
7 12	3 DC	3 1200	3.5-144	F9AA	Dig	RST	site.urc.asso.fr/index.php
7 12	3 DC	3 2359	1.8-50	SKCC Weekend	CŴ	RST SPC name mbr or	www.skccgroup.com
7 13	3 )C	8 0700	1.8-28	7th Call Area QSO	CW Ph D	RS(T) 7th-area state/county or	7qp.org
7 15	3 DC	3 0300	1.8-28	Indiana QSO	Ph CW	RS(T) IN county or	www.hdxcc.org/inqp/rules.html
7 17	30 B	3 2359	1.8-VHF	Delaware QSO	CW Ph D	RS(T) DE county or SPC	www.fsarc.org/qsoparty/rules.htm
7 20	3 )C	3 2359	3.5-28	New England QSO	CW Ph D	RS(T) New England county/state or	neqp.org/rules
8 10	<u>30</u>	3 1400	7	WAB 7 MHz	Ph	RS serial WAB square or country	wab.intermip.net/Contests.php
9 00	009	0200	1.8-28	4 States QRP Group Second	CW Ph	RS(I) SPC mbr or	4sqrp.com/SSS/sss_rules.pdf
9 19	ກເຮ	2030	3.5	Club	Ph	Ko	www.rsgbcc.org/nf
11 17	1	1 2000	132		ET8	A-char grid square	ft8activity au/index nhn/an
14 12	$\frac{1}{1}$	F 11 5	1.8-28	CO-M International DX	CW Ph	RS(T)	cam srr ru/en-rules
14 12	$\frac{1}{100}$	5 1200	3.5-28	VOLTA WW RTTY	Dia	RST serial CO	www.contestvolta.com
14 17	001	5 0300	7-28	Canadian Prairies QSO	CW Ph	RS(T) VE4/5/6 district code or	cpgp.ve6hams.ca
14 23	D( 1	5 0300	50	50 MHz Spring	All	4-char grid square	sites.google.com/site/
				Sprint		5	springvhfupsprints
15 23	D( 1	6 010	1.8-28	Run for the Bacon QRP	CW	RST SPC mbr or	qrpcontest.com/pigrun
18 17	001	8 2000	1.2G	VHF-UHF FT8 Activity	FT8	4-char grid square	ft8activity.eu/index.php/en
18 19	001	8 2030	3.5	RSGB 80-Meter	Dig	RST	rsgbcc.org/hf
10-				Club	0144	serial	
1900	JQ 2	0300	14	Walk for the Bacon QRP	CW	RST SPC name mbr or power (<13	grpcontest.com/pigwalk20
1900	301	90230	3.5-14		CW	RST SPC MDr or	nagcc.into
1919	JU 1		50 1200		Dig	RST 6 abor grid looster	qsi.net/ntc/party.ntmi
2105		4 0900	3 5-28		CW Ph	RST 0-Char grid locator	www.saii.01y.2a
2108	202	2100	3 5-28	ΥΟΤΑ	CW Ph	RS(T)	www.ham-vota.com/contest
2108	2012	2 110	3.5	NZART Sangster Shield	CW	RST serial Branch number (if	nzart org nz/activities/contests
2112	202	2 1200	1.8-28	His Maiesty	CW	RST EA province or serial	concursos.ure.es/en
- 1 '2'				King of	5		
2112	)(2	2 1200	3.5-28	EU PSK DX	Dig	RST EU area or	eupsk.club/eupskdx/
				Contest	5	serial	eupskdxrules.pdf
2114	)(2	22 0200	1.8-144	Arkansas QSO	CW Ph D	RS(T) AR county or	www.arkqp.com
2116	)(2	212159	1.8-50	Feld Hell	Dig	Mbr SPC	sites.google.com/site/feldhellclub
2121	)(2	22 0200	3.5	Baltic	CW Ph	RS(T)	Irsf.lt/en/balticcontestrules
2108	)(2	211100	3.5	Sangster	CW	RS(T)	https://www.nzart.org.nz/activities/contests/sangster-
22 08	)(2	211100	3.5	Sangster	CW	RS(T)	https://www.nzart.org.nz/activities/contests/sangster-
23000	02	3010	1.8-28	QRP ARCI Hootowl	CW	RST SPC mbr or	qrparci.org/contest
25000	142	30200	1.8-50	SKUC ODD Minimal Art	CW	KST SPC name mbr or	www.skccgroup.com
26140	142	02200	3.5, /	UKP MINIMAI Art	CW	KSI Class number of	grpcc.ge/contestrules
26190	JU2	a 2030	3.5	Club	CW	KO I	www.rsgpcc.org/nt
28000	102	0 2250	1 8-20		CW		WWW COMPY COM
20000	201	02030	3 5-14	RSGB FT/	ET4	A-char arid square	www.rsabcc.org/bf
20130	yJ	y2030	0.0-14	1000114	114	- onar ynu syuare	www.rayboo.org/iii

#### All dates and Times are in UTC and are not adjusted for local time

Mbr = Membership number. Serial = Sequential number of the contact. SPC = State, Province, DXCC Entity. XE = Mexican state.

Listings in blue indicate contests sponsored by ARRL or *NCJ*. The latest time to make a valid contest QSO is the minute listed in the "Finish Time" column. Data for Contest Corral is maintained on the WA7BNM Contest Calendar at **www.contestcalendar.com** 

Check for updates and a downloadable PDF version online at www.arrl.org/contests.

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### SILENT KEÝS

Sadly, this month we report not one, But two silent keys from the Papakura Amateur Radio Club

#### **Murray Greenman ZL1BPU**

Murray was well known for his Digital Modes Column in "Break-In" and won awards for the quality of his work, He received awards in 2017 (presented by Richard - right) and in 2021 also received the best technical article award. Murray spoke at several club meetings on a variety of topics, and these were always well received by members.



My memories of Murray include visiting his home in Waiuku to "expand my knowledge" about the "Other" HF bands, where he introduced me to the low HF frequencies, and of course the digital modes such as whisper, he also showed me his extensive collection of radio receivers, sadly my wife also discovered his love of brass bands, and they shared a lot of time discussing his other passion of music. He was to later help one of my sons who joined a brass band where Murray also taught.

He is a loss to both music and amateur radio and will be missed by many

Gavin ZL1NUX

The funeral for Murray is to be held at 1 pm Tues May 3rd St Andrews Church, 85 Queen St, Waiuku <u>https://www.standrewscentre.org.nz/</u>

#### **Bill Cooper – ZL1BAB**

Silent key Bill Cooper ZL1BAB

Bill passed away peacefully in his sleep on Wednesday 27th April 2022 aged 90 years.



I first met Bill when I was about 16 when he wired in a stove at my parents' place out at Paparimu, I had acquired an old marine radio and asked him what I needed to get it going, I did not know at the time that the main power supply was missing.

I did not meet him again until I joined the Papakura Radio Club in 1972 at the Scout Hall.

He was President of the Radio Club from 1968 -1969 and was made a life member in 2016.

Bill joined in the various transmitter hunts and club picnics the club held each year until his children grew up. I remember the cumbersome WWII mobile radios fitted to his car and the large 80m mobile antenna fitted to the rear of the car. Things have changed in size since then.

Bill was part of the building of your first clubrooms in Wood Street in 1975 Bill joined the Papakura Orchestra group and we did not see a lot of him at monthly meetings until he gave up the violin.

Bill has been one of the accounts reviewers since the rules changed in the way we audit our accounts.

Bill would always attempt to make the Radio Club AGM and also attended some of the NZART Conferences.

Our condolences to Norma and family

**Richard Gamble ZL1BNQ** 

#### From the Herald Notice

- Bill passed away peacefully in his sleep on Wednesday 27 April 2022 aged 90 years.
- Treasured husband, friend and travel companion of Norma for 64 years.
- Dearly loved Dad of Stephen and Colleen, Peter, Andrew, Jennifer and Simon, Poppa to 10 grandchildren and 9 great grandchildren.

A celebration of Bill's life will be held at Papakura East Presbyterian Church, 87 Settlement Rd, Papakura on Tuesday 3 May at 2 pm.

God is our refuge and strength. Psalm 46:1

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### **RAMBLINGS FROM THE EDITOR'S DESK**

In the age of modelling, can science survive?

This might seem like a very strange question, but it's one that has become critical for many involved in scientific research, Many fields, such as quantum physics, require models to try to explore how different interactions of sub-atomic particles may account for the results of particle experiments, These models are used to try to explain data, or to find ways in which seemingly conflicting theories may interact. Climate modelling, based on observed data, can also be used in prediction attempts, or to work backwards to see how changes may have altered the results or may have changed the outcome. But modelling has a notorious history of being wrong.

All models are based on assumptions, and the output of any model is only as good as the data put into it. A recent "Study" published, and carried on most media as research, was recently found to be a model, based on very simplified data, and assumptions, that were not only wrong but grossly wrong. The lead reviewer even went so far as to say that he would have failed a high school student if his model had been so "tainted" by a desire to prove his personal view, and this shows the problem with models.

Modelling is easier than research. Measuring a volcano's temperature & gas output, or placing sensors to discover the seismic movements, is risky, expensive and at times dangerous, but generating a half a dozen computer models with a few lines of code being changed until you get a result that matches what you think is happening is much easier, safer and of course, cheaper.

But the problem is that models are only as good as the data and changing the amount of a single item of data to get a result, may indicate a pattern, but changing 5 or 10 variables randomly to get a result may give as many as 50 possible ways to achieve the same result. To then pick one above the others moves from science to conjecture, and when personal opinions become involved, the results can become less than reliable, as has happened in the previously mentioned model. Models need data, but when everyone is too busy modelling to record any actual data, the lines between reality and fantasy become very blurred.

#### What is Panspermia?

The Panspermia idea is the theory of life soon after the heavy bombardment of meteoroids, between 4 and 3.8 billion years ago.

Scientists believe that some of these meteorites contained life in the form of bacteria. When the bacteria found Earth, they began to grow and evolve.



The best example of this came to light recently in a series of articles on the concept of panspermia. Most of us were exposed to the idea that life on earth probably began in what Darwin considered to be a warm pool somewhere, and then the systems grew in complexity, we were probably taught (incorrectly) that experiments in the 1970s proved this by creating life in a test tube. Yet to most scientists this "Fact" is not just unlikely, it is plain wrong. The 1970's experiment created a simple protein chain, Not DNA, or even RNA, it did not even create a protein molecule, just some random mix of partial proteins linking left and right random chains that could not even survive 20 minutes, let alone eat, move or reproduce. It was a soup, but not close to life.

The most accepted theory among most scientists in modern thinking is that life began somewhere else and found its way to earth on a space vehicle (probably an asteroid or comet, not a silver ship with folding legs) and this panspermia theory is now considered more likely than Darwinian evolution due to the problems of the rapid growth of life very suddenly in the geological record, and the lack of time for life to have randomly formed on the planet. Yet check any school textbook, and you still get life forming in a warm pool.

Such challenges to what we know are not always easy to accept, and to some these seem like fringe science, as it's not what we were told, and facts don't change. But in reality, it's the controversial thinkers that tend to change the world, just look at Elon Musk, you may never understand him, but you cannot deny his impact. Henry Ford too changed the world and when his engineers told him it was impossible to make a solid block engine, he found new engineers, and eventually got his block and who can forget Edison V Tesla in electricity generation and distribution, even if Westinghouse made all the money.

In science and engineering, the only thing we know for certain is that there is so much we do not know.

Recently I have been dealing with two different views on Ham Radio, and it's been difficult to reconcile the two conflicting views.

#### View 1: Ham radio is dying.

Let's face it we are all getting older, No one goes to club meetings anymore, people get their license and then don't come to club meetings and people just are not interested.



#### View 2: Ham radio is becoming popular

More people than ever are ready to sit their license if they can be helped to study. Lots of new Hams are getting registered, and many clubs are growing.

How can both views be circulating, and both present evidence, and yet be in direct conflict?

I think the problem is in the modelling. Since numbers have declined in recent years, and have done so for some time, the idea is that the trends will continue as nothing has changed, and no one needs radio, as they have the internet, zoom, skype and cellphones (which ironically are radios). So, by modelling the data we can see that decline is the trend and we will just drift towards empty buildings. But the world is not the same world it was just 5 years ago. The fuel crisis, food crisis (cost of living if you like) political uncertainty, war and of course disease, have changed how we view the systems we have relied upon for 30 years, and this has changed the data. As many move to build resilient communities, there is a desire for a form of communication that is not dependent upon commercial networks or the internet, and ham radio is a natural fit.

But it comes with a catch. Those who are interested are not the traditional ham, or are they?

I have had to ask myself, what is a traditional ham radio operator What attracts people to ham radio?

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- Communication •
- Experimentation •
- Self-reliance •
- Desire to learn new skills
- Social connections •
- Connecting with other countries •
- Listening across the bands •
- Contesting •
- The camaraderie at field events •
- SOTA type activities •
- **ORP** operations •
- **Building stuff** •
- Fixing stuff •

And there are many other things we can be attracted to, but the fact is none of us is really "Normal" we are all a little different, we are hardly a standard group, each is very different, yet we are connected by a common interest and that interest borders on the weird.

And that's a good thing, the world needs some weirdness, it needs some of us to think differently, to be different. It's okay to be different.



Is it "normal" to talk on a radio as you drive to or from work in the morning, or to try to connect to an expedition team who have set up radios so you can swap a simple report to confirm you can hear each other, or to carry equipment to a site, and then set up an antenna and try to get others to make contact so you can say "I did that"? but it is normal to find pleasure in simple things if we step back from the chaos of a world that never takes the time to step back, stop worrying about what the models tell us, and just start living, and doing things that please you and then you can share that pleasure with another, and you might find it's contagious and they might like it too.

And if that happens often enough, then maybe some of the things we do, might be a little more normal, but either way, we will have company. And I can't think of a better group to enjoy this with than the local ham radio community. So bugger the models, let's give it a go and see what happens.

de ZL1NUX

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### NICOLAI TESLA'S DREAM STEPS CLOSER TO REALITY

US Navy wirelessly beams 1.6 kW of power a kilometre using microwaves, proving Tesla had the right idea, just not the right technology.

In what it describes as the most significant demonstration of its kind in half a century, the US Naval Research Laboratory (NRL) beamed 1.6 kW of power over a kilometre (3,280 ft) using a microwave beam at the US Army Research Field in Maryland.



The idea of transmitting power over long distances without wires has been around for well over a century. In fact this was a main driver of tesla in his push for AC power systems. By the 1970s, the technology was mature enough to make it a key component in a concept by American physicist Gerard K. O'Neil that proposed establishing space colonies to build huge solar collector stations to beam power back to Earth.

The principle is simple enough. Electricity is converted to microwaves, which are then focused in a tight beam (antenna on the left), the receiver made up of what are called rectenna elements (above right). These are very simple components that consist of an x-band dipole antenna with an RF diode. When microwaves strike the rectenna, the elements generate DC current

Despite initial doubts, microwave beaming turns out to be surprisingly efficient and the NRL team led by Christopher Rodenbeck, Head of the Advanced Concepts Group, has been tasked by the Defense Department with developing the Safe and Continuous Power bEaming – Microwave (SCOPE-M) project to explore the practicality of fielding the technology.

Using a 10-GHz microwave beam, SCOPE-M set up at two locations. The first was the US Army Research Field at Blossom Point, Maryland, and the second was at the Haystack Ultra Wideband Satellite Imaging Radar (HUSIR) transmitter at MIT in Massachusetts. The frequency was chosen because it was not only able to beam even in heavy rain with a loss of power of under five percent, it's also safe to use under international standards in the presence of birds, animals, and people. This means the system doesn't need the automatic cutouts developed for earlier laser-based systems.

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In the Maryland tests, the beam operated at an efficiency of 60 percent. The Massachusetts test didn't reach the same power peak, but had a higher average power level, so more energy was delivered.

The SCOPE-M technology could one day be used to transmit power on Earth or from large orbital solar power stations to provide electricity to the national grids 24 hours a day, 365 days a year. However, a more immediate application that the DOD is interested in is to beam power directly to troops in the field, eliminating the need for vulnerable fuel shipments.

"Although SCOPE-M was a terrestrial power beaming link, it was a good proof of concept for a space power beaming link," said Brian Tierney, SCOPE-M electronics engineer. "The main benefit of space to Earth power beaming for the DOD is to mitigate the reliance on the fuel supply for troops, which can be vulnerable to attack."

### SCIENTISTS MAKE 'MIRACLE MATERIAL' BREAKTHROUGH TO REVOLUTIONISE SOLAR POWER

Scientists have discovered a way to make ultra-efficient solar cells on a commercial scale using the "miracle material" perovskite.

A team from the City University of Hong Kong (CityU) and Imperial College London made the discovery in a breakthrough that could have major implications for renewable energy production and reaching zero carbon objectives.

Perovskite has been hailed for its remarkable properties compared to traditional silicon solar cells, however until now they have been too unstable to be suitable for commercial use.

The next-generation cells are expected to cost less, have a much higher power conversion efficiency, and be lightweight and flexible – opening up new applications like coating glass windows with thin layers of transparent solar panels.

Zeev Valy Vardeny, a Distinguished Professor of Physics at the University of Utah, described perovskite's unique properties in 2017 as "unbelievable, a miracle material". At the time, commercialisation of the technology was thought to be at least a decade away, however this discovery could push that forward considerably. The chemists were able to overcome perovskite's difficult properties by making use of a metal-containing material called ferrocenes, which they added as an interface between the light-absorbing layer of the solar cell and the layer that transports electrons.

"The unique properties of ferrocenes can help overcome the problems with perovskite solar cells," said Professor Nicholas Long from Imperial College's Department of Chemistry.

Using this breakthrough technique, the scientists became the first team to create a solar cell capable of performing at a similar level to silicon cells while still remaining stable. Tests of the new solar cells found that they could run under continuous illumination for more than 1,500 hours while retaining 98 per cent of their initial efficiency. The researchers have patented the design, which was described in a paper published in the journal *Science* 

### 'HEAT BATTERY' INVENTION COULD MAKE MILLIONS OF HOMES GAS-FREE

Pilot tests of 'game-changing' salt batteries are set to take place in homes in France, Poland and the Netherlands this year

Researchers believe they can make millions of homes in Europe gas-free in the near future, after inventing a "heat battery" based on salt and water.

The team from Eindhoven University of Technology say their cheap, compact battery system is ready for real-world tests and will be a "game-changer for energy transition".

The heat battery is based on an old thermochemical principle, which is that when water is added to salt it produces heat. The reverse is also possible, whereby heat can be used to evaporate the water, thus storing the heat energy inside the salt.

Storing heat within dry salt makes the battery completely loss-free, providing an incredibly efficient way to store energy for future use. This is particularly useful when energy supply is coming from renewable sources, such as wind and solar, which tend to fluctuate significantly and therefore require gas or other sources to supplement them.



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It took 12 years to develop and create a battery design that could actually work at scale.

The heat source to store in the salt can be taken from industrial by-products, such as the residual "heat waste" in factories or surplus heat from data centers.

The system is made up of a heat exchanger, fan, evaporator/ condenser and a boiler with salt particles. Despite its simplicity, the proof-of-concept was capable of providing heating for an average family of four for two days.

Engineers have since upgraded this to a fully working protoype, around the size of a large cabinet, that could be used in the real world. With nearly 30 times the storage capacity, the system could heat a home for up to two months.

"It is not yet a product, but everything is now ready to be tested for the first time in a real-world situation," said Olaf Adan, a professor at Eindhoven University of Technology. "While the potential is great, we have also seen many great potential technologies that have not made it. So we're going to keep our feet on the ground and take this one step at a time."

A pilot is already being set up to test the technology later this year in homes in France, Poland and the Netherlands. However there is very little information of how the battery will be "Heat Charged" between uses

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### THE SUN'S ACTIVITY HAS BEEN INCREASING FAR FASTER THAN SCIENTISTS FORECASTED.

A gigantic plasma wave that launched from the sun smashed into Mercury on April 12, likely triggering a geomagnetic storm and scouring material from the planet's surface.

The powerful eruption, known as a coronal mass ejection (CME), was seen emanating from the sun's



far side on the evening of April 11 and took less than a day to strike the closest planet to our star, where it may have created a temporary atmosphere and even added material to Mercury's comet-like tail, according to SpaceWeather.com.

The plasma wave came from a sunspot — areas on the outside of the sun where powerful magnetic fields, created by the flow of electric charges, get knotted up before suddenly snapping. The energy from this snapping process is released in the form of radiation bursts called solar flares or as waves of plasma (CMEs).

On planets that have strong magnetic fields, like Earth, CMEs are absorbed and trigger powerful geomagnetic storms. During these storms, Earth's magnetic field gets compressed slightly by the waves of highly energetic particles, which trickle down magnetic-field lines near the poles and agitate molecules in the atmosphere, releasing energy in the form of light to create colorful auroras in the night sky. The movements of these electrically charged particles can induce magnetic fields powerful enough to send satellites tumbling to Earth, Live Science previously reported, and scientists have warned that these geomagnetic storms could even cripple the internet.

Unlike Earth, however, Mercury doesn't have a very strong magnetic field. This fact, coupled with its close proximity to our star's plasma ejections, means it has long been stripped of any permanent atmosphere. The atoms that remain on Mercury are constantly being lost to space, forming a comet-like tail of ejected material behind the planet.

But the solar wind — the constant stream of charged particles, nuclei of elements such as helium, carbon, nitrogen, neon and magnesium from the sun — and tidal waves of particles from CMEs constantly replenish Mercury's tiny quantities of atoms, giving it a fluctuating, thin layer of atmosphere.

Previously, scientists were unsure if Mercury's magnetic field was strong enough to induce geomagnetic storms. However, research published in two papers in the journals Nature Communications and Science China Technological Sciences in February has proved that the magnetic field is, indeed, strong enough. The first paper showed that Mercury has a ring current, a doughnut-shaped stream of charged particles flowing around a field line between the planet's poles, and the second paper pointed to this ring current being capable of triggering geomagnetic storms. The processes are quite similar to here on Earth. The main differences are the size of the planet and Mercury has a weak magnetic field and virtually no atmosphere.

The sun's activity has been increasing far faster than past official forecasts predicted, according to the National Oceanic and Atmospheric Administration's Space Weather Prediction Center. The sun moves between highs and lows of activity across a rough 11-year cycle, but because the mechanism that drives this solar cycle isn't well understood, it's challenging for scientists to predict its exact length and strength.

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### HIBERNATION IN SPACE MAY NOT BE POSSIBLE FOR HUMANS AFTER ALL

The standard Sci-Fi staple of hibernation for long space voyages may be much harder to achieve than we thought possible, if the work of a trio of researchers from Chile stands up to scrutiny. And it may prove to be a hurdle we cannot overcome

Roberto F. Nespolo and Carlos Mejias from the Millennium Institute for Integrative Biology and Francisco Bozinovic from the Pontifical Catholic University of Chile set out to unravel the relationship between body mass and energy expenditure in animals that hibernate.

They discovered a minimum level of metabolism that allows cells to persist under cold, low-oxygen conditions. For relatively heavy animals like us, the energy savings we might expect from entering a deep, hibernation-like state would be negligible. In fact, we'd probably be better off just napping our days away the old-fashioned way.



The word hibernation often invokes images of a bear tucked away in a den for a long winter's rest. While bears do shut down for several long, cold months, their dormancy isn't quite like the true hibernation among smaller critters like ground squirrels and bats. In these animals, body temperature plummets, metabolism shrinks, and heart rate and breathing slow. This process can reduce energy expenditure by as much as 98 percent in some cases, removing the need to waste effort hunting or foraging. However, even in this state, the animal can still lose more than a quarter of its body weight as it burns through its fuel reserves.

If we applied the same basic mathematics to a hibernating adult human, a daily food intake of around 12,000 kilojoules would be replaced by a need for just a couple hundred kilojoules of body fat. Keeping with this scenario, we might imagine our intrepid space tourist tucked up in their specially-kitted bed would lose just over six grams of fat a day. Over a year, this would add up to around two kilograms of weight.

This might be fine for a rapid journey to the Jovian moons, but if the average adult wants to survive decades floating through interstellar space to a nearby star, they'd need to pack on an additional few hundred kilograms of fat. That, or routinely wake to throw back a lard milkshake or three.

These back-of-the-envelope calculations rely on many assumptions, not least of which is how hibernation might scale. After all, there's probably a good reason behind the scarcity of massive hibernating mammals our size (or larger). When mammals are active, however. The scaling of the relationship between active metabolism and mass produces a slightly different graph that reveals a point at which hibernating doesn't really save a great deal of energy for bigger beasts.

That point is near our own mass, implying our total energy needs while hibernating aren't going to be significantly different from those while we're merely at rest. This could be why bears don't really hibernate in the same way smaller animals do. And it also means for us humans, going to all the risk and trouble of cooling our bodies, dropping our heart rate and breathing, and artificially depressing our metabolism just might not give us the results we'd hope for.

If we want to save our boredom and keep from munching through the ship's supply of freeze-dried ice cream, we might as well binge The Expanse, take a bunch of sedatives, and doze our way to Mars. Forcing humans to hibernate just isn't going to be worth the hassle.

This research was published in Proceedings of the Royal Society Biological Sciences.

Or Just Stay awake and log contacts to pass the time



# **Radio Electronics Group Inc**

### NZART Branch - 89

# **Annual Equipment Sale**

At Glenview Club Inc.

211 Peacocks Road Glenview Note new road layout. Hamilton

Saturday 21st May 2022

Vendors: 8-30am

Doors open 10am

Prebooked Tables \$20 On the Day \$25

Public \$2 Lucky Ticket Entry

**Refreshments – Door prizes** 

Plenty of parking, Easy access, Motor Home Parking

For Vendor Regis\ration Form, Contact Vern ZL1TKG ZL1REGSALE@g mail.com





HAMTOON

THIS WAS THE BEST HAM FEST, LOOK AT THESE GREAT BUYS. COULD YOU STORE THEM FOR ME TILL MY WIFE IS OUT OF TOWN ?

Papakura Radio Club Inc.

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#### SOME NETS - FOR WHEN YOU ARE LOOKING FOR SOME COMPANY

Dav	Time (Local)		Group
Day	Time (Local)		Group
Sunday	08:00	3.750	Southern Net
	09:00	3.700	Bch 10. Franklin.
	09:15	3.755	Bch 65. Papakura.
	16:00	7.125	SPAM Net (AM Mode)
	19:00	146.625	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
updated	20:00	3.605	Br 80. Hibiscus Coast
updated	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	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 ORP SSB Net
Friday	20:00	3.850	SPAM (AM Mode)
	20:30	3.650	W.S.R.C.
	20:30	3,560	Digital Modes Net
	20100	51550	Bightar House Net
Saturday	10:30	28.530	10-10 Down Under
	19:30	3.650	Christian Fellowship
	20:00	3,760	777
	20:30	3.600	Ch 62. Reefton/Buller
Daily or Other	07:30	3,696	71 20A
	08:30	3,730	71 3RP
	15:00	14 300	Pacific Seafarers
	17:30	3 760	Home Brew
	05:00 Zulu	14 183	
	18:00	7 115	VK70B
	19.30	3 720	7L1MO
	18.30	3 766	
	10.30	2 720	
	20:30/20:00	3.730	
	20:30	3.723	LLZTIN / LL4KF
	21:00	3.0//	
	21.00	<u>  3.535</u>	New Zealand Net (CW)
	i nis is designe	ed to be a living lis	t, Please update whenever you are able:

Also: Calling Frequencies:DailySunset-Sunrise3580 USBNZ FSQCallCourtesy of Murray ZL1BPUDailySunrise-Sunset7105 USBNZ FSQCallDaily24/77104 USBInternational FSQCall

 $I^\prime m$  told the last of these sees some amazing DX, especially around sunset.

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

Elected Officers			
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
	ZL1ASN	Rolly Adams	021 042 7760
	ZL1RAH	Rodger Hanson	027 568 7659
	ZL1RIC	Ricky Hodge	027 533 8155
AREC Section Leader	ZL1BNQ	Richard Gamble	021 729 270
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\$25.00Family Membership and newsletter\$40.00Bank Account number: 03-0399-0019896-00\$40.00

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

146.900 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)

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