

THE SPLITROCK TIMES

The newsletter of the Splitrock Amateur Radio Association.
APRIL 2023 edition.

Welcome to the ninth edition of the Splitrock newsletter with its new name.

Editor: Fred Wawra W2ABE. [contact W2ABE@arrl.net]

'The Splitrock Times'.

OFFICERS

President Bruce N2XP

Vice Pres. Bob K2RFH

Treasurer Bruce N2OQX

Secretary Tracey KD2ISX

Trustee Bruce N2XP

Member at Large/'assistant to the President', Fred W2ABE.

Important note: VE testing will be on the second Monday in January. VE testing is usually on the second Monday of the month at the Mount Arlington Civic Center-7pm registration.

Remember if you are a member of ARRL [and you should be] then subscribe to the weekly email update to

keep aware of conditions and activities on the bands and League announcements.

The Club Meets every second Tuesday at 7:30 at the Mount Arlington Civic Center [the log cabin building at the west end of Fern Place]. Come join us for fellowship and learning.

The Club's mailing address is: S.A.R.A. PO Box 528 Lake Hopatcong, NJ 07849 You can also contact us at:

www.splitrockara.org OR

membership@splitrockara.org

The repeater is on 146.985, the offset is -600, and the PL is 131.8 Hz.

Due to inclement weather,
there was no Club meeting
in March. [safety first!]

See at the April meeting!

**NOTICE: There will be NO
zoom at the meetings for the
time being due to WIFI issues**

Reminder....

**Submissions for the
newsletter need to be in
word format or an email.**

**Reminder: there is a \$35.00
fee paid directly to the FCC
for new calls, vanity calls,
and renewals. There is no
FCC charge for upgrades.**

THE PRESIDENT'S MESSAGE

To Splitrock Members,

We'll be showing a Power Point
presentation about some of the
equipment, tools and supplies
used for repairing your radio

equipment. Also, there will be a
demonstration of the oscilloscope
and its uses in trouble shooting
radio circuits.

Our Hamfest is coming up soon,
The Club is looking for volunteers
to help with parking, security and
having fun. Members that
Volunteer for Hamfest do not pay
for admission. Please help and
sign the Hamfest Volunteer sheet
this April meeting.

If anyone has any ideas for topics,
videos and guest speakers, send
me an email at
President@splitrockara.org.

73, Bruce N2XP

SARA President

ECLECTIC TECHNOLOGY

By: Fred Wawra, W2ABE.

**This time Photons, what they
are and are not!**

This time the subject is the
electromagnetic spectrum and
photons. First about the spectrum.

We start the sound spectrum at zero
and go up from there. We can hear
sound vibrations from about 20 cycles

up to about 20,000 cycles. After that we get into supersonic audio which many animals can hear up to about 60,000 cps. These are sound vibrations which we can hear. We call it sound which is a mechanical phenomenon.

The electromagnetic spectrum also starts at zero and goes up all the way to gamma rays. The electromagnetic spectrum is exactly what it says, electro-magnetic with photons being the fundamental unit of electromagnetic radiation, possessing both electrical and magnetic fields, therefore being conveyors of energy. The very low frequencies are used for electrical transmission including power and for audio reproduction. At all frequencies the alternating current in a wire gives off a magnetic field. As the frequency goes up into the kilo-Hertz range the field becomes more useful a what we call Radio waves. At that point we start to deal with radio waves with a very long wave-length. As you go up in spectrum, cycles per second, [frequency] the wave lengths get shorter. The more cycles in a there are in a given time, a second in this case, the shorter the wavelength must be to fit into that time frame. When we talk about radio frequencies, we generally use the term Hertz in honor of Heinrich Hertz who was involved in early radio experimentation. So, we say 60 Hz, [pronounces Hertz] instead of 60 cycles (cps.). Getting back to

wavelengths and the Electromagnetic Spectrum, as the frequency increases so does the energy in the electromagnetic spectrum, the wavelengths get shorter, and they get to be microwaves and then become infra (below) red and then the visible spectrum which starts at red and moves up in frequency to blue then to the ultraviolet. Past that there are x rays and ultimately gamma rays! For now, we are talking about the visible light spectrum. The interestingly at each part of the spectrum, the waves seem have different properties. Light is a wave and is also perceived as a particle and is therefore sometimes called a 'wavicle'. Photons have a wave-particle duality, meaning that they sometimes behave as waves and sometimes as particles. They are a combination of waves and particles in the quantum, indivisible, subatomic level. Sometimes photons behave more like waves, and other times more like particles. The photon is a fundamental quantum [basic indivisible] unit of electromagnetic force. That means that they are the same, massless particle at any frequency but seem to behave differently at different frequencies. This is why they can be perceived as light in our visible spectrum but can also cause current to flow in radio antennas. As a reminder electromagnetic radiation should not be confused with sound vibrations which are mechanical as was explained earlier. Electromagnetic

radiation can be at one cycle per second as well as a mechanical vibration that we perceive as sound. The AC current in your house wiring is a 60-cycle electromagnetic force that we call electricity, but you can also hear a 60-cycle tone or musical note.

Light is composed of photons which are created and given off when electrons in an atom, say in a light bulb, be it incandescent or another device, are raised to an excited state above their ground [normal] state and as they return to their 'normal' state of lower energy, give off that extra energy as photons! How we see is that the extra energy as photons excite the electrons in our retinas producing a stimulus in our brains which we perceive as light from the light source and all the objects in the room the light is in. But what happens to the photons that we do not see that hit the walls or the ground or whatever? They are absorbed by the material they hit by exciting the electrons in the atoms of that material to a higher state thereby producing, by the excited state, heat. Think of touching a rock on a warm sunny day and feeling the heat the rock gives off! Photons travel at the speed of light (which they comprise) in a vacuum and extremely close to that around us. When you look into a room for instance, what you are seeing is all of the photons that have bounced off the objects, walls, floor and ceiling which

are then focused by the lens in your eye which excite the atoms in your retinas, which in turn send electrical signals to your brain enabling you to see the room and the things in it. Again, what happens when you turn off the light? All of the energy the photons possess is absorbed by the materials in the room [remember the rock on the warm sunny day] it happens so fast that to us that it seems that it is instantaneous.

Photons are subatomic [quantum, meaning the most basic] particles that carry energy in all parts of the electromagnetic spectrum, but we are most familiar with them in the infrared, visible light, and ultraviolet part of the spectrum which lies above the shortest radio waves. What makes this so interesting is that the waves in 'radio' part of the spectrum's waves seem to behave differently! Speaking of photons, the frequency of photons is limitless.

Think that photons act like a ripple in a round kiddie pool where you throw a stone in, the ripples spread out to the edge of the pool causing the sides to move. The water did not change state but merely conveyed the energy of the stone to the edges of the pool. In the same way the photon, the sound wave, or the radio waves are simply conveying energy but not changing the medium that they are traveling through. Photons and radio waves are massless conveyors of energy, but

sound waves are different, again, as they are mechanical in nature like they stone in the kiddie pool. In our eyes photons excite cells in the retina to produce electrical impulses to the brain that we perceive as sight. In radio the same photonic energy, by its electromagnetic characteristic, produce through the magnetic field, current in radio antennas! Remember that current can only be caused to flow in a wire when the magnetic field is in motion and the radio waves are in motion when they hit an antenna thereby causing current to flow in the wire which then is used to decode the signals in your radio! There is so much more to this subject, as I have only scratched the surface, it is a good beginning anyway. I repeated myself a few times hoping that it would help in the understanding of the subject. Till next time, Frederick Wawra, W2ABE.

Do not forget the swap n'shop/tech net on the repeater at 8pm on Sunday nights!

Angelo DePalma submitted a great article last month, but due to email problems two paragraphs got 'lost'.

Apologies to Angelo! Here are those wayward paragraphs:

The guiding principles of ham radio operation should be courtesy, thoughtfulness, and understanding. It's ok to add something notable to your 73 that you forgot during the information exchange, for example if you're operating at low power (QRP) or are portable/mobile in some exotic location. But when someone says "73" he's not asking about the weather 2000 miles away, or whether you have any scratches on your ICOM-7300.

He's saying "GOODBYE." Respect that and make the airwaves a more enjoyable place.

IF you are up early in the morning and want to get on the air there is the 'friendly net' on 7.235 from 7am to 8am 365 days a year. It is a non-political "G" rated net open to all.

There is also the 'Awful Awful Ugly net on 3855, with check ins and rag chewing at 8pm and net starting at 9pm.

VE sessions 2nd Monday each month. Pre-registering required.
