



www.limarc.org

March 2018

Volume LIII No. 3

**Next meeting to be held:
Wednesday, Mar. 14, 2018
8:00pm Levittown Hall**

MEMBERSHIP MEETING

PIZZA WILL BE SERVED - 7:00pm

25, 35 and 40 year service pins will be presented

MEETING TOPIC

SOLAR FLUX LOW

Why the bands are dead and how much worse will it get.

Save The Dates!!

Ham Radio Stations - Levittown Hall - March 10th - 2:00pm

(HF, SSB & Digital)

Anniversary of Lindbergh's Flight - May 20th - Cradle of Aviation

Outdoor Hamfest—Briarcliffe College - June 10th - pg. 19

Field Day 2018 - June 23-24



When the Constitutional Convention ended in 1787, Benjamin Franklin remarked that they had worked so long and so hard, that as he looked out the window he never knew if he was seeing a rising or setting sun. He concluded however, that with the completion of the Constitution, it was certainly a rising sun.

Ham radio can ask itself a similar question. Are we witnessing the end of a hobby that some consider a dinosaur, or are we at the beginning of a new era in communication led by all of the innovations of the digital age? Who can answer the question?

I believe that we are the ones who need to rise to the occasion. If we try to convince a youngster as to how great it is to talk to people around the world, that idea no longer has the allure that brought us into the hobby. Explain to the same youngster about the use of computers and the digital world of communications, and you have half a chance. However, you have to be able to talk about things that you have some familiarity with.

One of the directions that we are taking as a club, is to make sure that our members do become more familiar with new innovations in amateur radio.

Also, to try to provide hands on demonstrations. On March 10th, after the VE session (around 2 PM) at Levittown Hall, we will have at least two stations set up. One will be sideband, and the other will be digital. We invite you to come down and get on the air in either mode, and perhaps rejuvenate some of the enthusiasm that brought you into the hobby in the first place.

It could be contagious.

73,

Richie, K2KNB

President

LIMARC Board Meeting Minutes

February 07, 2018

Officers present: President - Richie K2KNB, Vice President – Craig KD2CXK, Secretary – Ken WB2KWC, Treasurer – Jerry WB2ZEX

Directors present: Ken KD2GXL, George WB2IKT, Bob W2OSR, Lew N2RQ, Jim KD2EDX

Guests present: Martin W1EMR, Steve WB2KDG

The meeting started at 7:36PM with the board voting to accept the minutes of the January board meeting.

President: Richie K2KNB told us that Jim KD2EDX has taken over from Rob KC2ILP as LIMARC PIO. We have gotten permission to operate a station after the March 10 VE session. Levittown Hall has asked us to notify them when we set up antennas outside of the building.

Upcoming Events: We have approval for our Field Day operation starting Friday, June 22 and ending Sunday, June 24. Our special event station commemorating the flight of Charles Lindbergh will be at the Cradle of Aviation Museum on Sunday, May 20. The special event station commemorating the Apollo moon landing will be on Friday, July 20. The Cradle of Aviation Museum wants to do events all year in 2019 for the 50th anniversary of the Apollo moon landing. We are still uncertain of the date that we will be holding the June 2018 Hamfest. Thank you to Jim KD2EDX for getting www.LIMARC.org on a new server please inspect the site and comment on things that you like or dislike.

Vice President: Craig KD2CXK has found a contact to help with youth training classes. Hopefully we can sponsor workshops to teach skills like soldering. Craig KD2CXK has spoken to the director of the NYCTA facilities division about his project for communication in the New York City subway and the NYCTA seemed very enthusiastic about going forward with this. The program for the February 14 LIMARC meeting will be the recycling of electronics. This is not just about recycling hardware but will include how to scrub data off storage devices. The pre-meeting program will be a presentation by Richie K2KNB about different types of coaxial cable. The March 2018 general membership meeting will be our annual membership meeting with pizza being served and plenty of time for socializing. Pins for exactly 25, 35 and 40 years of LIMARC Membership will be distributed.

Secretary: Ken WB2KWC reported that he has received no incoming correspondence since the last meeting.

Treasurer: Jerry WB2ZEX reported \$14,019.75 in the checking account \$809.12 in the PayPal account and \$2,009.59 in the Memorial funds for a total of \$16,928.42.

Membership: Jerry WB2ZEX reported that we have 311 members for 2018 which is approximately 20 less than we had at this time in 2017.

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Field Day: Richie K2KNB commented that it is great that Bill KC2SYL is acting as the manager of Field Day planning. We have approval to use this Field Day site from Friday at 4 PM to Sunday at 5 PM. We will be having a barbecue at the Field Day site Friday evening from 6:30 to 7 PM. Field Day set up should be a lot easier this year because our equipment is much lighter (the new coaxial cable is approximately one quarter the weight of the old cable).

Technical: Echolink at Glen Oaks is down due to an Internet outage; resolution of this problem is being delayed due to a labor dispute. This is also causing problems with some control and linking functions.

Good and Welfare: Laura Malchick, daughter of Lew N2RQ and Alice WB2IJY passed away in January. Tim KB1HQK's wife is in the hospital.

ARES: Ken KD2GXL reported that there has been a change in ARES personnel: John KD2AKX has assumed the position of DEC with Ken KD2GXL and Joe W2BMP assuming the role of assistant DECs. The Long Island Marathon will be on Sunday May 5. Planning sessions have started for the Ocean to Sound Relay and the Gold Coast Bicycle Tour.

School Club Roundup: The February session of SCR will run from Monday morning 2/12 through Friday evening 2/16. LIMARC is the sponsoring club of SCR so LIMARC members should operate at least an hour or two.

The essay subject for the LIMARC Essay Contest will be "Ham Radio – Bridging the Gap". It will be up to each participant to define the gap that ham radio bridges (e.g. distance, language, politics). The essay should be approximately 500 words. This contest is open to high school seniors and college freshmen who either live in the NLI section or are family members of LIMARC members.

Craig KD2CXK is offering a \$200 first prize for students writing an essay on why they became involved in ham radio.

The meeting adjourned at 9:55 PM.

Respectfully submitted;
Ken Gunther WB2KWC
LIMARC Secretary

GOOD AND WELFARE

Tim's KB1HQJ wife Jeannie is doing well after surgery.

Jerry KB2DPD is home from the hospital. Please call to say hi.

LIMARC General Meeting Minutes

February 14, 2018

The pre-meeting presentation was by Richie K2KNB who told us about how coaxial cable works and some practical applications of Ohm's law.

The meeting started with the Pledge of Allegiance at 8:05 PM.

Hamfest: Richie K2KNB told us that Quicksilver will not be at the February 25 Hamfest. John was not able to attend nor was he able to have one of his employees set up at the Hamfest. Any LIMARC member that purchases a table at the Hamfest will not need to pay for one vendor.

President: Richie K2KNB told us that after the March 10 VE session we will be setting up at least one HF station so that people newly licensed or upgraded will have an opportunity to get on the air. This station will operate from 1 PM to 5 PM. There has been a change in some of the Town of Hempstead government positions; we are not sure how this will affect our ability to use town facilities. On Sunday, May 20 from 9 AM to 4 PM we will be operating a Special Events Station in honor of Charles Lindbergh's solo transatlantic flight. On Friday, July 20 we will be operating a Special Event Station for the anniversary of the Apollo moon landing. Both of these events will be at the Cradle of Aviation Museum using the call K2CAM. The LIMARC website has been completely redesigned please take a look at our new site. If you see any errors or have any comments please email webmaster@LIMARC.org. The audit committee has finished their examination of the LIMARC financials and reports no discrepancies. Because of a Spectrum labor dispute our Internet connection at Glen Oaks is not working. This is causing outages in such services as Echolink and Amateur Radio Newslines. Thank you for your patience as we search for alternatives.

Vice President: Craig KD2CXX reminded us that the March meeting is our annual membership meeting; pizza will be served starting at 7 PM. 25, 35 and 40 year membership pins will be distributed at that meeting. Craig is working on many interesting programs for our meetings in 2018; more details will be announced once the schedule is definite.

Treasurer: Jerry WB2ZEX was not at the meeting but submitted his Treasurer's report via email. \$14,019.71 in checking, \$809.12 in PayPal and \$2099.59 in Education Funds for a total of \$16,928.42

Membership: Jerry WB2ZEX submitted the membership report via email stating that we have 309 members for 2018.

Field Day: Richie K2KNB told us that we will be starting Field Day setup on Friday night and will probably be having a barbecue when we are done. Bill KC2SYL said that we are looking for youth to help us with Field Day setup; they could earn public service credit for helping us.

Hamfest: One of the new LIMARC membership benefits in 2018 is free admission to the June Hamfest which will be held on June 10 at Briarcliffe College. KJI is planning on being there.

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Public Service: Jim W2KFV told us that there has been a reorganization of ARES personnel which was announced at Orlando Hamcation. In Nassau County John KD2AKX has assumed the position of DEC while Ken KD2GXL and Joe W2BMP are sharing the position of Assistant DEC. Those that cannot take the full ARES Emergency Communications courses but still want to participate in ARES events can take the ARES Reserve training.

Scouting: Bob W2OSR said that scheduling of Boy Scout events will be taking place in August. If you are looking for Boy Scout participation in one of your events that is the best time to ask for it.

Good and Welfare: Richie K2KNB told us that Tim KB1HQJ's wife Jeannie is doing well after surgery. Jerry KB2DPD is in the hospital; please call his home phone to say hi.

After the business portion of the meeting Craig KD2CXK gave a presentation on how to dispose of your unwanted electronics and the importance of removing any personal data from these devices before doing so.

Respectfully submitted;
Ken Gunther WB2KWC
LIMARC Secretary

SCHOOL CLUB ROUNDUP UPDATE

The February 2018 School Club Roundup seemed to start with very poor band conditions, that included a coronal mass ejection. However, as of 2/24, we have received 58 entries. Several stations seem to have overcome the poor conditions to have respectable scores. The deadline for entries is March 3. The web page will show the claimed scores automatically after 2359Z on March 3. We usually wait a week or two more for paper entries, postmarked not later than March 3 to arrive. Last year we had 86 entries and we hope we will receive at least that number this time. We have seen first time entries from school stations in several states, including NY. You should not hold back an entry because of a low score. We have had entries with as few as one contact.

Thanks to Mel, KS2G, for a link to a very nice article about a CO school in their local newspaper. http://www.reporterherald.com/news/loveland-local-news/ci_31676712/berthoud-high-students-go-ham-amateur-radio-competition

Thanks to Ken, WB2KWC, who keeps up with checking the entries as they come in, we should be able to certify the results by the end of March.

73, Lew, N2RQ

LIMARC HAMFEST PHOTOS

February 25, 2018



Photographs - Richie



K2KNB



We are very fortunate to have really good support for our hamfests. Our vendors are loyal, our members make every effort to attend, and our volunteers really make it all possible. Despite heavy rains, we had a really good turnout.

Thank you to our volunteers!

Don, WB2BEZ

Hank, N1YDY

Bill, KC2SYL

Jerry, WB2ZEX

Ken, WB2KWC

Steve, WB2KDG

Doug, N2EJ

Aaron, WC2C

John, KD2AKX and the ARES Team

Al, W2QZ and the VE Team

Joe, N2IMF and family for food services

Jeff, N2ION

Ceil, W2CTG

Joe, W2BMP

Rick, K2RB

Les, K2TGW

Bob, W2OSR

George, WB2HPI

Lew, N2RQ

Ken, KD2GXL

Tom, KC2NKQ

Mark, N2FLF

Andy, WA2CDL

Larry, KC2AED

John, W2GW

Mike, KD2AMZ

Jim W2KFV

Limarc Field Day 2018 Project HALF Mar 2018

Insurance Partially Complete

Reservations site partially complete verify permissions

Below are open items

Vehicles rentals fuel purchase for generators amenities food and drink refrigeration
mess kitchen supplies personal hygiene

Public relations(PIO) government staff registration / welcome desk create welcome
scripts obtain or create literature obtain media (tv, radio, press) contact
list create media distribution plan and timeline prepare and
schedule announcements for local ham nets

Site layout and mapping

Objectives stations scores, scoring operator's stations guests staffing
schedule date(s) and locations for equipment layout and testing

Project HALF HANDS ARMS LEGS FEET

Objectives Pre-Setup Load truck on Friday

Setup on Saturday empty truck and stage equipment site build infrastructure
antennas, tents, wiring, lighting, power, food service area

Takedown on Sunday load truck unload truck at new storage location(s)

Identify Asset source community service credits non-profits youth club's student's
family members neighbors

Recognition community service credits for participants

emergency communications experience

Does Size Really Matter?

Can A Short Length of Transmission Line Really Make a Difference?

Anyone who has spent more than a few hours on the HF bands has, no doubt, come up against an olde timer repeating that empty trope, that all your transmission lines should be at lengths of even multiples of $\frac{1}{4}$ wavelength ONLY (sometimes they can't keep the folklore straight and advise odd multiples of $\frac{1}{4}$ wavelength). Any other transmission line lengths and "*caution - there be dragons*"!

My best guess is that this is an erroneous corollary of a simple concept that is almost always a question on Amateur Radio exams:

Any length of a given coaxial cable that is an odd multiple of a signal's $\frac{1}{4}$ wavelength inverts the impedance connected to the other end. In other words, if the other end of your $\frac{1}{4}$ wavelength long coaxial cable is not connected to anything and is effectively an "open circuit", at the other end it will look like the other end is shorted together? If you actually shorted the far end of this $\frac{1}{4}$ wavelength long cable, it would look like an opened wire, not connected to anything else from the opposite end. It is a less than obvious aspect of how coaxial cables "rotate" the phase angle, in degrees and scalar impedance, in ohms, of the complex impedance presented at the far end of that transmission line!

Of course, in a perfect world where your resonant antenna has an impedance of 50 ohms, your transmission line will not change your load's impedance, no matter what length of transmission line it must run through.

But, who said that this is a perfect world?

The lesson to come away with from all this is that there is no such thing as a "forbidden transmission line length", no matter what some of these fellows caution you.

But the length of your transmission line can become important in some situations.

Transmission lines designed for a non-standard 50 ohms impedance can be used as impedance transformers if you get their lengths correct with relation to the wavelength of your transmissions.

But most of us are using good old 50-ohm impedance cables most of the time...

I have an Alpha-Delta DX-CC fan dipole that was a bit off of resonance at 10 Meters. Rather than a Voltage Standing Wave Ratio (VSWR) of 1:1, it tended to show me something in the 5:1 range (oh, well). With the magical powers of an impedance matching network in any decent antenna tuners this is not an insurmountable problem. My solution happened to be an MFJ 998 Intellituner at the time, but other makes and models would suffice. But, when I happened to add an additional one-foot

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jumper to my transmission line, from my antenna to the antenna tuner, my antenna tuner could no longer find an acceptable inductance/capacitance to correct for my antenna's impedance mismatch? What that means for this particular antenna tuner is that it ran through its range of available Inductance/capacitance, searching for an SWR of 1:1.7 or less and after it failed to find anything that worked, it just "gave up".

Now, nothing much had changed except for that silly one extra foot of LMR400 coaxial cable...

So, the most likely suspect is a faulty jumper cable, or the barrel connector used to attach it, right?

Well, here in AC2GS-land we actually do have a couple of little "toys" to test this hypothesis. Not only can we use a volt-ohm meter to test for continuity breaks of an open wire or shorts between the center wire and the shield wire, but we also have a nice little RigExpert AA-600 antenna analyzer that can do a quick test of a coaxial cable for any abrupt impedance changes, using its Time Domain Reflectometer (TDR) feature. The coaxial cable was fine, as well as any of the connections used.

But let's make believe that we don't trust such things as Vector Network Analyzers (VNA), or TDRs.

In the original setup I had 75 feet of LMR coax connected to my fan dipole. Onto that was a two-foot LMR400 jumper, which in turn was connected to my antenna tuner.

I removed the 2-foot-long original jumper and used the one-foot jumper that caused all the problems, with another one-foot jumper after that – the total transmission line length was the same as it was originally, but the *questionable* coaxial cable was being used instead of the original coaxial cable that worked at the beginning.

And don't you know it, that darn thing tuned without a problem!

One silly extra foot of transmission line in a 77-foot coaxial cable made that much of a difference?????

Yup!

For a lucid explanation of why this is so, I will have to review the concept of complex impedance, which you all needed to know for your licensing exams.

The reason we call impedance a *complex* number is not because it is a difficult idea to deal with. No, it is a term from Mathematics – a *complex* number is a number that can be expressed in the form $\mathbf{a} + \mathbf{b}i$, where \mathbf{a} and \mathbf{b} are real numbers (2, -3, 4.777777, 1/32) and \mathbf{I} is an imaginary number whose square is equal to -1.

When Physicist borrowed this concept from Mathematicians, there were already TOO many places where \mathbf{I} was used, so they changed its name to \mathbf{j} instead, but it's the same *imaginary* number that when *squared* gives you the nonintuitive -1 answer.

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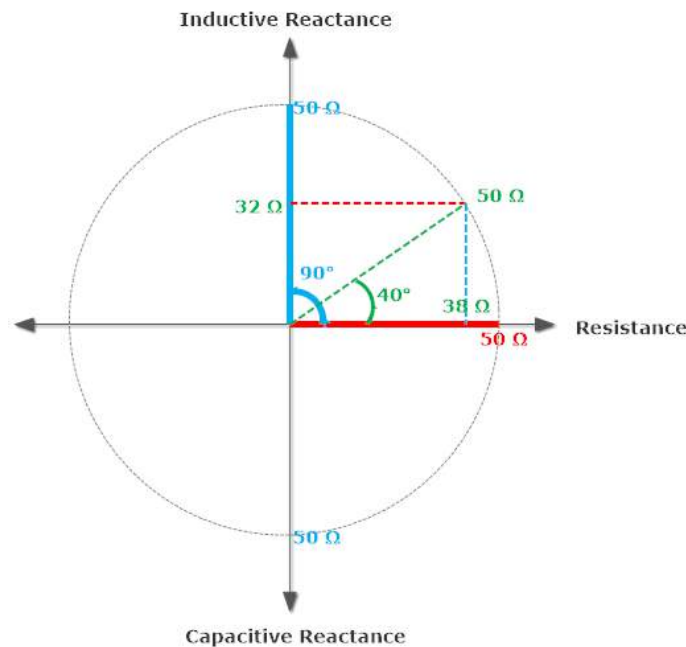
In impedance the real number is the pure resistive component of the complex impedance – a value that remains constant as the frequency of the current is varied, and **b** is the *reactance* in the complex impedance – a negative value for capacitance reactance (which decreases with increasing current frequency) and a positive value for inductive reactance (which increases with increasing current frequency). Physicists and Electrical engineers describe complex impedances with the notation:

$$Z \{\text{impedance}\} = R \{\text{resistance}\} + j(| X_L - X_C | \{\text{absolute value of the sum of inductive reactance and capacitive reactance}\})$$

If you want to *burst* a Mathematician’s bubble, you can explain that there really isn’t anything *imaginary* about *j* – that *j* just represents a 90-degree phase shift between an inductor’s voltage and current (current *lags* voltage) and *-j* represents a -90-degree phase shift between a capacitor’s voltage and current (current *leads* voltage). Since these phase shifts are symmetrical, the largest phase difference that gives unique values is 180 degrees of phase shift, everything further is just mirror images of the first 180 degrees of phase shift or is identical to the first 180-degree phase shift!

Impedance isn’t actually a simple one-dimensional *scalar* value, like resistance, it is a *vector* value with an amplitude **AND** directionality – in this case it is the phase angle between current and the voltage. The phase angle can be zero and the complex impedance can be purely a resistive one, or 90 or -90 degrees and be a purely reactive complex impedance. The total *scalar* part of the impedances for all of these cases can be identical, **BUT** their phase angles are quite different and how they interact in their circuits are incredibly different!

It is possible to describe the same exact *scalar* portion of a given complex impedance in ohms as the radius of a circle, whose resistive and reactive components portions are forever changing as a function of phase angle!



(Notice that these are all just a bunch of right triangles, and surely you remember your Pythagorean Theorem, or maybe even a bit of Geometry?)

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The red colored complex impedance is exactly what you would like your antenna system to show: a PURE resistive 50 Ω impedance (with a phase angle of 0 degrees – the current and the voltage are exactly in phase with each other)!

The blue line shows the *same* 50 ohms of impedance, but rather than a pure resistive impedance, it is a pure inductive reactance, and the phase angle between its current and voltage is 90 degrees out of phase.

Impedances are not always *purely* inductive, capacitive, or resistive. Very often it is some combination of Reactance and Resistance, and there are A LOT of combinations of these values that will give you 50 ohms of complex Impedance – the phase angle will give you an idea how and why all these *seemingly identical* impedances are quite different!

When you are dealing with a perfect antenna system of a pure 50 ohm resistive impedance, the length of your transmission line is inconsequential, but when there is a mismatch between the impedance of your antenna and the impedance of your transmission line, that's where *the magic* happens. Under these circumstances the absolute impedance, in ohms changes, but often more importantly the impedance's phase angle rotates, as the transmission line length increases. This can be a bigger problem than how many ohms the Impedance gains or loses.

Antenna tuners are *a bit magical* as well. They are impedance matching circuits with limits to how much impedance can be transformed into something like 50 ohms resistive impedance, and the Impedance's phase angle is a very important factor.

Although my autotuner could handle my less than resonant antenna for a given phase angle, when I extended my transmission line a mere extra foot, it was too much for my autotuner to handle, and failed miserably.

What difference does a foot of coaxial cable make? Sometimes all the difference in the world!

Sometimes you *really* need to be concerned about the transmission line length to get your signal out. But most times this is not necessary at all.

So, when some guy on the HF band tells you why you **MUST** measure out all your transmission lines to multiples of $\frac{1}{2}$ wavelength, either wish him a good day or be prepared for a long QSO while you attempt to explain why this is not quite true, except for special conditions...

Or send them a link to this article <grin>!

73,

Roy AC2GS

(When Roy AC2GS isn't writing informative articles, or puttering around with some concept that seems strange, but beautiful, he can be found hosting an informal Technical Net every 2 nd and 4 th Wednesday of each month at 9 PM on the KC2RC Repeater 146.730 MHz, the PL tone is 88.5 Hz – we stream it live on the Internet (<http://live.kc2rc.com>) and have archived links to audio recordings of them (<http://archive.kc2rc.com>) - you are all welcome! In addition, he also is in charge of the LIMARC TechNet's Mailbag, which now includes any Physics or general science questions, for anyone that can't get onto the Net by radio (or EchoLink), by emailing their questions to TechNet@LIMARCTech.net. He can also be heard trying to cogently answer the odd Physics questions on the LIMARC TechNet!)

Where the Heck **IS** the Center of This Solar System?

Well, It's All Relative!

Six of one, half a dozen of the other. You may say the center of the Solar System is the Sun, Aristotle might say it is good old Terra Firma right here, on Earth - most people are more interested if they can pay their bills to worry about the center of anything, better yet something you can blissfully take for granted, like the Solar System (it won't ever take any real offence, and even if it did, what could it do?)

But people will argue about all sorts of stuff (just ask if antenna tuners REALLY do anything useful on the HF bands and watch the fireworks)!

So, what about the center of this darn Solar System?

In the dawn of civilization, it is believed that a very popular belief was that the Earth was just a relatively flat collection of land and water, covered by some kind of dome-like enclosure with all kinds of lights stuck on them. Apparently, the idea of a semi hemispheric snow globe was invented a very long time ago, before Google:

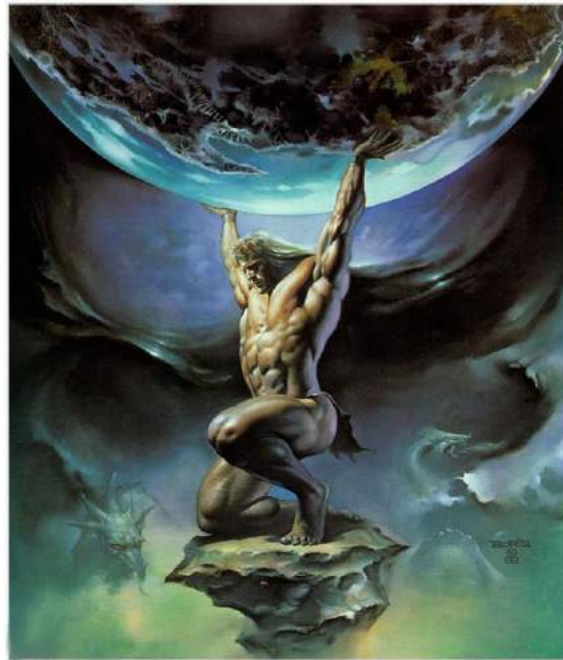


Of course, this inevitably leads to the question: "But what's keeping it 'UP'?"

Ya gotta love humanity. Even if they don't have the faintest idea how anything works, they still convince themselves that they know exactly how it all works!

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The Ancient Greeks pinned the job on Atlas, the last of the race of Gods known as the Titans. Atlas was holding it in place. But then, what was Atlas standing on at the time, and what was keeping him up, his brother Dopey (oh, no that's another fairy tale, altogether):



But this was before Alexander the Great, so what if you weren't ruled by Greeks and their curiously very human gods? Well, there were always nondenominational turtles:



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There is a very cute story that Carl Sagan used to tell. He was giving one of his standard “Cosmos” talks to a packed auditorium. After the talk, a sweet little old lady came up front to speak with Professor Sagan. “You, know, you’re all wrong with planets revolving around the Sun, and such. In fact, the Earth is held up by a Giant Turtle!”

“But madam,” Carl Sagan responded, “what is keeping the turtle up?” Sagan felt that this should end the discussion, but his elderly adversary cheerfully responded, “It’s turtles all the way down!”



Now, some dubious schools, no doubt, still think that one of Christopher Columbus’ greatest feats was to come up with the idea that the Earth was ROUND, rather than being flat, but that isn’t quite true.

An ancient Greek Philosopher, Aristarchus of Samos, back in 300 BC not only knew that the Earth was round but using some clever geometry calculated the diameter and circumference of the Earth that was very close to its actual values. Most educated Europeans of the time were fully aware of Aristarchus and his calculations. Columbus believed that Aristarchus had calculated the circumference to be far longer than Columbus felt it was – that is why Columbus, erroneously, thought that by the distance it took him to reach “The New World”, he had actually circumnavigated the Earth and had reached the other side of Asia/India (that was why Native Americans were given that confusing name, “Indians”).

But just because the Greeks had Aristarchus of Samos, doesn’t mean that everyone was just as enlightened. There was another philosopher, with a much better Press Agent, by the name of Aristotle (yes, that Aristotle, I told you his Press Agent was great), and he totally disagreed. Aristotle, like many

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philosophers of the day, did not sully his hands with any actual experiments. He simply sat comfortably and came up with his brilliant ideas, which were just too good not to be true!?

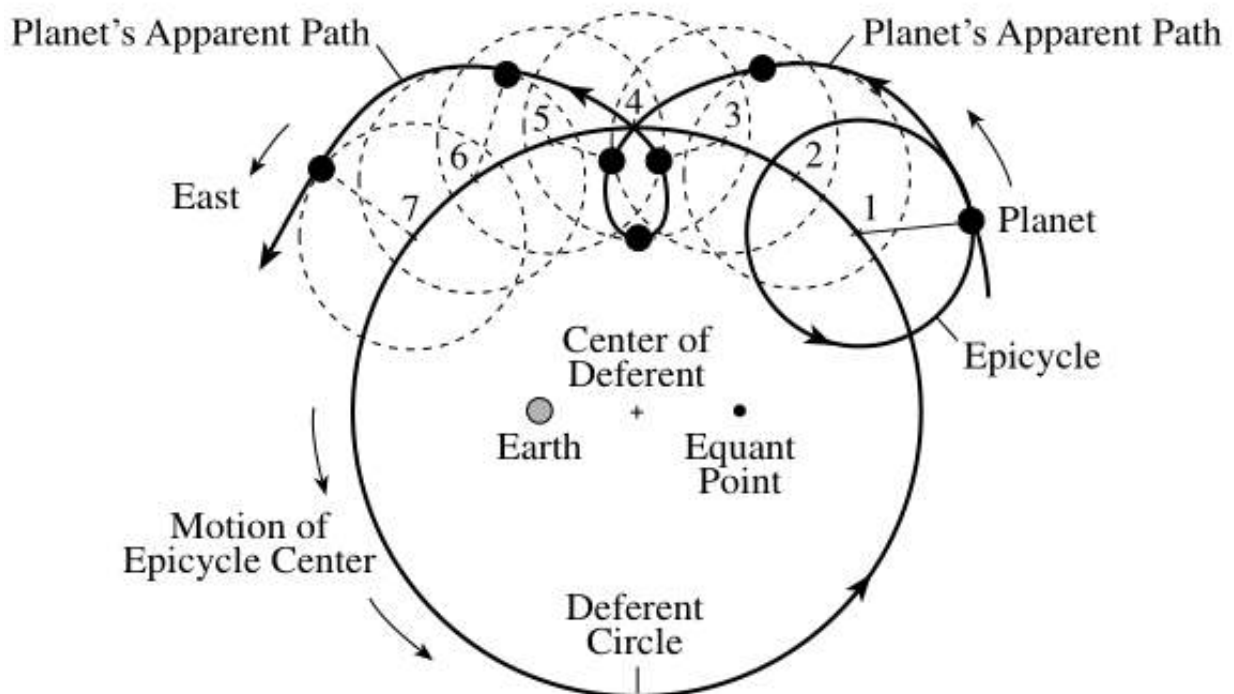
Aristotle, the Father of Western Philosophy, was not that good with “Natural Philosophy”, or its more modern term of today, Physics!

History is littered with brilliant, yet incredibly wrong descriptions of how the world “worked” as told by Aristotle. Too many to itemize here and now, but he got the Solar System really messed up.

It is from Aristotle that we get the idea that at the center of the Solar System, or the center of Everything was Aristotle and with him the Earth. This world was the stuff of fire, water, earth, and air. But there was still one more elemental element – Aether, which made up everything above us. It made up nested celestial globes (this required at least 53 spheres to work, but still never quite “worked” well, even then). Each globe had objects that emanated light embedded within them. The ones that were well behaved were called stars, but the misbehaving ones were called “wandering stars,” or in Greek, “planets”!

Sounded quite beautiful and people tried their damndests to get it to work, but it just could never be made to actually work the way the sky seemed to be working...

It is in man’s nature when he comes across an elegant explanation that is just completely wrong, to “tweak” it rather than throw it out and start from scratch. That is exactly what Claudius Ptolemy did 400 years later, to Aristotle’s beautifully elegant mess of a concept. Ptolemy’s “tweak” is that somehow some of those “wandering stars,” like Venus could not only revolve in their celestial spheres but could, also, revolve around some shorter distance – they could revolve in short orbits as they revolved around the Earth. The complex path this created is called “epicycles”:



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For no particularly good reason that I have ever found the Roman Catholic Church REALLY liked the Aristotlean-Ptolemy description and took it very personally when some people had a problem with the concept. They sent poor Galileo away to “house arrest” for the rest of his life, but they made it right – they apologized a few years ago. Galileo was reported, unavailable for comment.

One bright fellow, who had a big problem with the Ptolemy model of the Solar System was one Nicolaus Copernicus, who wrote the first “Revolutionary” book (it is exactly from this book’s title and its eventual effect, that we use the term “revolutionary” for age changing, “*De revolutionibus orbium coelestium - On the Revolutions of the Celestial Spheres*”).

The “revolutionary” idea was that the Sun was the center of our Solar System, with the Earth being just one of many planets rotating around the Sun! The Roman Catholic Church was not a fan, but Copernicus lived in German Prussia, where the Reformation had weakened the Roman Catholic Church’s “reach.”

Regrettably, Galileo was firmly ensconced in the very bosom of the Roman Catholic Church, Florence, Italy. Still, he published his findings of four moons that had the nerve to revolve about Jupiter and not Earth – called the Medicean Moons, after his De Medici patrons, it was later called Galilean satellites, now they are better known as Io, Europa, Ganymede, and Calisto (which Kepler preferred). Galileo also published his findings, that Venus appeared to possess “phases” as if it was orbiting the Sun.

A very colorful gentleman, Tycho Brahe (look this guy up! He had the tip of his nose sliced off in a duel and took to wearing a metal nose – he was the Michael Jackson of his day, he also was said to have refused to absent himself from a dinner function to relieve his bladder – his bladder burst, and he died of complications) had a “twist” on Copernicus – he believed that the Sun and the Moon revolved around the Earth, while other planets revolved around the Sun.

There were still problems, again because people were enamored to “elegant” solutions, and one such elegant part was that orbits should be “perfect circles” ...

Well, Johannes Kepler realized that they weren’t perfect circles, they were ellipses with elliptical eccentricities! Mind you; he was quite right; he just didn’t have any idea WHY they were ellipses.

That had to await the mind of Isaac Newton and HIS book “Principia.” He explained how and why gravity required planets to revolve around other bodies in elliptical paths.

But Newton’s Theory of Gravity had more than a few problems, itself, which brings us to Albert Einstein and his Theories of Special and General Relativity...

Maybe we’ll deal with those in a future article?

Einstein’s theories finally tied “a bow on the gift box” by explaining the quirky orbital dynamics of the planet Mercury – the Sun was dragging space time around with it!

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So, it all comes down to Albert Einstein, and one of the fundamental precepts of his theories of Relativity is that no frame of reference is “better” or “truer” than any other – they are all equally “legitimate”!

He thought the same should go for “the center of the Solar System”. As far as Albert was concerned the “center of the Solar System” can be anywhere, you want it to be, as long as you can calculate the “transform equations” to describe how the system changes from one frame of reference to another.

But that’s a subject for another article...

73,

Roy AC2GS

(This article is based on a presentation that was made on a LIMARC TechNet in November 2017. If you are interested in science (and why would you still be reading if you aren’t), stop by the LIMARC TechNet every Sunday night at 8 PM, and bring questions, or answers, or email your questions to [mailbag@LIMARCTech.net!](mailto:mailbag@LIMARCTech.net))

LIMARC Membership Report – March 2018



Please welcome the following new/returning members:

William Pavone KD2DWI

Elliot Tayner K2HYK

Matthew Coon KD2OYL

If you haven’t already done so; this is your last chance to renew you membership if you want your name and call to appear in the 2018 LIMARC Roster. Regular membership dues are \$40. Senior dues (65 y/o or older) is \$30. Full time students and associate members are \$20, and family membership is \$15. Dues may be paid in person at any LIMARC function, can be renewed by PayPal. LIMARC’s PayPal address is limarc@optonline.net. Dues can also be mailed to PO Box 392. Levittown NY 11756

Long Island Mobile Amateur Radio Club

Long Island Outdoor Hamfest

Sunday, June 10, 2018

Briarcliffe College

1055 Stewart Ave., Bethpage, NY 11714

Doors Open at 9AM to Buyers

Vendors Set Up at 7:30AM

Amateur Radio Dealers & Equipment ~ Tune-Up Clinic (Get you Rig Checked!)

Television, Computer, CB Equipment, ARRL Information

Long Island Mobile Amateur Radio Club Information

DXCC and WAS Card Checking

General Admission \$6

Entry at 9:00 AM

ADMISSION FREE TO CURRENT LIMARC MEMBERS !!!!!

Free Parking! Food & Refreshments! Door Prizes!

**SELLERS > All Spaces are \$10.00 each or 3 for \$25.00.
Admission for each person including the main seller is \$6.00 each.
No pre-registration is necessary.
Over 600 outdoor tailgate spaces are available! Gates open at 7:30 AM for Sellers.
Bring your own table, chair, or umbrella!**

Vendors Must Comply With NY State Sales Tax Laws as applicable.

The sale of guns, ammunition or pornographic material is prohibited.

SELLERS MUST PACK UP THEIR OWN GARBAGE AT CLOSING

Talk-In on W2VL Repeater 146.850 (136.5 PL)

For more information, see www.LIMARC.org

or contact our Hamfest Chair at 516-694-4937, or email us at Hamfest@limarc.org

Richie K2KNB

Directions

From Long Island Expressway: Take LIE to exit 44S (Seaford-Oyster Bay Expressway-Rte 135) South to exit 9 (Broadway, Bethpage). Make a right turn onto Broadway and bear right onto Cherry Avenue. Go past Bethpage High School and at the light make a right turn onto Stewart Avenue. Go past the flashing light and look for Briarcliffe College on your left - watch for the Hamfest entrance.

From Northern State Parkway: Take the Parkway to exit 36A South (Seaford-Oyster Bay Expressway-Rte 135) and follow directions above.

From Southern State Parkway: Take the Parkway to exit 28AN (Seaford-Oyster Bay Expressway-Rte 135) North to exit 9 (Plainview Road). Make an immediate left at the bottom of the ramp (under the Expressway) onto Broadway and follow the LIE directions above to the college.

*** <http://www.limarc.org> &/or <http://www.limarc.org/fest.htm> ***

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FREE MONEY FOR LIMARC EVERY TIME YOU SHOP !!!!!**Gary Buchwald – W2MIT**

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What is AmazonSmile?

AmazonSmile is a simple and automatic way for you to support LIMARC every time you shop, at no cost to you. When you shop at smile.amazon.com, you'll find the exact same low prices, vast selection and convenient shopping experience as Amazon.com, with the added bonus that Amazon will donate a portion of the purchase price to LIMARC!

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To shop at AmazonSmile, simply go to smile.amazon.com from the web browser on your computer or mobile device. You may also want to add a bookmark to smile.amazon.com to make it even easier to return and start your shopping at AmazonSmile.

In fact, here's a direct link which will take you to smile.amazon.com and will automatically designate LIMARC as your supported charity:

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(Continued from page 20)

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REMINDER

LIMARC is a 501(c)(3) not-for-profit corporation. As such, all monetary donations are tax deductible, and donations of equipment are deductible either to the amount that the club might sell the item for, or the fair market value. As we move forward in trying to provide assistance to schools wishing to set up amateur radio programs, please consider us for your donations.

REMINDER

If You Hear Something, Tell Someone

Those of you who use the repeaters on a regular basis are all too aware of the fact that there are certain individuals who have nothing better to do with their time than to interfere with people on the repeater. An organized effort is underway to locate and identify these individuals. **YOU CAN HELP.** If you hear malicious interference on any of the LIMARC repeaters, please hit the reverse (HM/RV) button on your radio and see if you are able to hear them on the input. Please email your findings to rfi@LIMARC.ORG. Indicate whether you heard them on the input or not. Please include the time of day, the repeater, your location and type of antenna (if you have a beam, include the heading).

Thank you for your cooperation.

DOOR PRIZE DONATORS

Below is a list of individuals, organizations and companies that contributed to the 50th Anniversary celebration.

Please consider making future purchases from them as a thank you for their generosity and loyalty to our club!



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- www.dxengineering.com



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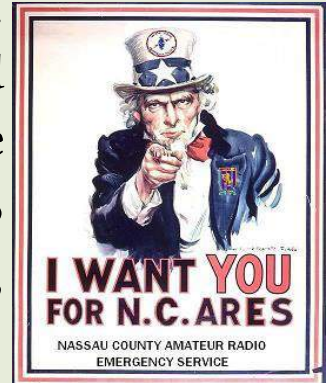
IT Helpdesk Services

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All Nassau A.R.E.S. Members

Nassau County A.R.E.S. meets on the second and fourth Thursdays of the month. All are welcome to attend! ARES meetings are held at the Nassau Co. Red Cross, 195 Willis Ave in Mineola.



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Ask for Jeff



VE Testing Schedule for 2018



LIMARC VE Test Sessions are held on the second Saturday of every odd numbered month at the Levittown Hall, Levittown Parkway, Hicksville, NY. Please remember to bring **two** pieces of identification (one with a photo), your **original** license **and** a copy of it, any **original** Certificates of Successful Completion of Examination (CSCE's) **and** copies of them. Also remember to bring the proper fee in check made out to ARRL VEC or exact change (NOTE: the 2018 fee remains at \$15.00). The LIMARC VE Team will supply the FCC Form 605. For further information, contact Al W2QZ at (516) 623-6449 or Jim W2KFV at (516) 997-6023.

2018 SESSION DATES AND TIMES AS POSTED

March 10 1:00pm, May 12 1:00pm, July 14 9:00am,
 Sept. 8 9:00am, Oct. 28 Hamfest 10:00am Nov. 10 1:00pm

2018 Meeting Schedule

All general meetings are held at: Levittown Hall 201 Levittown Parkway, Hicksville, NY. Meetings start at 8:00PM.

All Board meetings are held at the Levittown Library 1 Bluegrass Ln, Levittown, NY. Meetings start at 7:30PM.

LIMARC AT A GLANCE-2018

Month	Bd. Meeting	General Mtg	VE Session	Hamfest	Other
Jan	3rd	10th	13th		SATURDAY 6 - HRU
Feb	7th	14th	25th	25th	
March	7th	14h	10th		
April	4th	11th			
May	2nd	9th	12th		Lindbergh event - 20
June	TBA	6th		10th	FD - 23 -24
July	TBA		14th		Apollo event - 20
August	TBD				
Sept	TBA	12th	8th		
Oct	TBA	10th	28th	28th	
Nov	TBA	14th	10th		
Dec	TBA	12th			

LIMARC Repeater Nets
(W2VL 146.850, unless otherwise noted)

Monday: Info Net, 8:30 PM

Net Control Operators

Week 1-Lew N2RQ; week 2-Richie K2KNB; week 3-Ceil W2CTG; week 4-Harry KC2FYJ; week 5-Rick K2RB

Following the Info Net

Stay tuned for the Swap – n – Shop Net, 8:45 PM (approximately)

Bill **WB2CUK**, Net Control

3rd and 4th Wednesday, Computer Net with Ken **WB2KWC**

Sunday: Tech Net, 8:00 PM – Dick **K2RIW**, Net Control

1st and 3rd Tuesday, Astronomy Net, 8:30 with Craig **KD2CXK**

Any month with 5 Wednesdays, Nostalgia Net, 8:30 with Richie **K2KNB**

LIMARC Repeaters: W2VL 146.850 – IRLP node 9126;

W2KPQ 147.375 - IRLP node 9126;

W2KPQ 224.820; **W2KPQ** 449.125- IRLP node 4969; **W2VL** 1288.000

WA2LQO 146.745; Digital Mobile Radio **W2KPQ** 449.375 (No PL)

All analog PL tones are 136.5

Ceil Gomez, W2CTG Editor of The LOG,

W2CTG@LIMARC.org

LIMARC PO Box 392 Levittown, New York 11756-0392

Published monthly except July & August

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Email for officers and Board members can be sent to their call sign @limarc.org. In addition, all can be reached at LIMARC@LIMARC.org

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From The Editor

Please send all items for entry into the LOG to W2CTG@LIMARC.org. I will be glad to accommodate all appropriate requests. If you miss a deadline (the deadline is the 15th of the month) I would be glad to place your item in the LOG next month, space permitting.

Thanks, and 73, Ceil W2CTG - Editor, The LOG