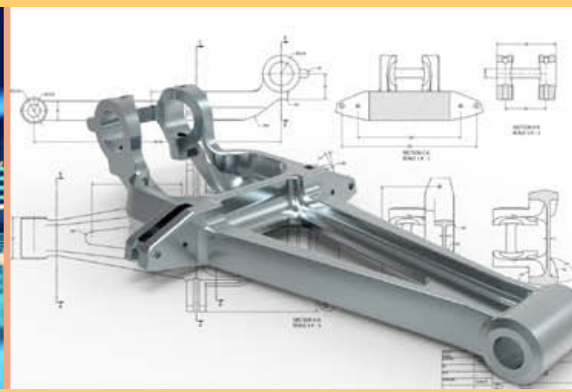




THE PULSE

SEPTEMBER 2019 | VOL. 66, NO. 7

OF LONG ISLAND



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I hope that everyone had an enjoyable summer and spent some time with family and friends. I would like to thank James Colotti for arranging the Networking Event that was held on August 6th. Several new members attended and they had an opportunity to learn more about LI Section activities. On a sad note, you have probably heard that Jesse Taub, one of our most dedicated long time members, passed away on August 10th. Nikolaos Golas has prepared a summary of tributes to Jesse. I would encourage you to read his article, *"Remembering Jesse Taub"*, which starts on [page 7](#).

The committee formed to nominate the 2020 Section Officers has selected a slate of candidates. I would like to thank the committee all for their efforts in choosing people who are well qualified and dedicated. The 2020 Section Officer nominees, and further information about the election was announced at the July 8th ExCom meeting. An IEEE eNotice was sent to all Section members on July 9th. The time for submitting petitions has expired, and no petitions have been received. Therefore, the slate of candidates for the **2020 Section Officer positions are:**

Section Chair: Arnold Stillman

Vice Chair: Ronald Pirich

Treasurer: Santo Mazzola

Secretary: Rhonda Green

I would like to thank the candidates for volunteering to serve the Section. Voting will take place in accordance with the Section Operations Manual utilizing IEEE vTools Voting. There are several events that are already planned for this fall. Refer to the Calendar of Events and the informational flyers in this edition of the *PULSE*. I would also encourage you to check the LI Section website and calendar frequently to stay informed about all of our upcoming events and seminars. This year **IEEE Day** will be celebrated on October 1st. There will be worldwide celebrations to demonstrate the ways that IEEE members can join together to leverage technology for a better tomorrow. More information can be found at their website, ieeeday.org/about/.

We are always in need of energetic volunteers with a positive and collaborative attitude to help us with Section activities. There are micro-volunteering activities for those whose time is limited. Any member of the IEEE Long Island Section is welcome to attend the Executive Committee meetings. If you would like further information on any of our activities, please contact me at chair@ieee.li. Thank you for your support of our Section, and I look forward to meeting you at our upcoming events.

Warm regards,

Louis D'Onofrio, PE, SM IEEE

IEEE Long Island Section 2019 Chair

THE PULSE OF LONG ISLAND



The Pulse of Long Island is produced by the Long Island Section of the Institute of Electrical & Electronic Engineers. It is published monthly except during July & August.

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THE IEEE LONG ISLAND SECTION WEBSITE

The IEEE LI Section website is regularly updated to reflect recent section activity and upcoming events. Each Society and Affinity Group has a dedicated page that describes their function and includes contact information.

www.licn.org

CONSULTANT'S NETWORK OF LONG ISLAND






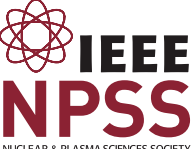






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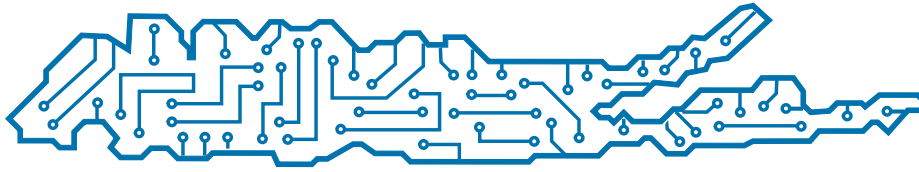
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MEMBERSHIP DEVELOPMENT

For more information on membership with the LI Section of the IEEE, e-mail Carl Meshenberg at: membership@ieee.li

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<p>The Long Island Section of IEEE has 18 Chapters. Each Chapter is a technical subunit of the Long Island Section, associated with an IEEE Society. The Chapters, as well as the Section, are always welcoming volunteers. If you would like to help with any of the Long Island Chapter's steering groups, please do contact the relevant Chapter Chair, Vice Chair, or one of the Section officers.</p>		 <p>SYSTEMS COUNCIL (SYSC) Chair: Stephanie White Vice Chair: Vacant Email: systems@ieee.li</p>	 <p>TECHNOLOGY & ENGINEERING MANAGEMENT SOCIETY (TEMS) Chair: Brian Quinn Vice Chair: Barbara Porter Email: tmc@ieee.li</p>



Long Island's Electrical and Electronic History

Jesse Taub
IEEE Long Island
Section Historian

I hope that you are all still enjoying the summer. It was particularly eventful for many Long Islanders because July 20 was the 50th anniversary of the Apollo 11 moon landing and humans set foot on it for the first time. I have no doubt that historians living 500 years from now will consider it the greatest accomplishment of the 20th century.

A key element in this feat was the Grumman Lunar Excursion Module or LEM. It landed on the Moon after being detached from the Command Module and history was made when Neil Armstrong set foot on it. Grumman received the contract from NASA in 1962 and made 14 fully flight ready modules. Seven thousand Grumman employees, including 3000 engineers worked on the program. Most of us have known one or more persons that were involved with it. In July of 2011, the IEEE Long Island Section presented Grumman with an IEEE Historical Milestone plaque for the Grumman Lunar Module with the following citation:

"The Grumman Lunar Module was the first vehicle to land man on an extraterrestrial body, the Moon. Because it was designed to fly solely in space; its design, construction and testing continuously pushed the technology envelope for lightweight metals and unique electrical and electronic systems resulting in one of the most important and successful achievements of mankind."

The plaque was placed in the lobby of 600 Grumman Road, Bethpage. It is available for public view. This milestone recognition came about from a proposal written by Dr. Ron Pirich, then a Grumman Fellow and now one of our IEEE Long Island Section officers.

While the LEM was an achievement in aeronautical engineering, it also had many contributions from the work of engineers in our profession. This included a VHF communication link which allowed the astronauts to communicate from the Moon to the Command Module. It also had a 2GHz transmitter and receiver which was used to show TV pictures of Neil Armstrong walking on the Moon and uttering his famous "One small step for man, etc." there was a radar and a computer aboard as well. The computer was the first one built with IC chips. As you can see it was fitting that the IEEE honored this accomplishment.

The Moon landing had special significance to me because I had the honor and privilege to spend time with Neil Armstrong. My company, AIL Systems, gave me an award in 1993. I was informed that it would be presented to me by the Chairman of the Board at its annual dinner meeting. It so happened that the Board Chairman was Neil Armstrong. The dinner was at a county club in Smithtown and I was seated next to him. This gave me an opportunity to try to understand what special qualities he had that enabled him to accomplish such a historic feat. He told me about his experience as a Navy flight test pilot prior to going to NASA and his getting a degree in aeronautical engineering. He came across to me as someone who was not afraid to break new ground and had the intellect to take risks that were calculated. He was an extremely modest man. He was reluctant to talk about his role in the Apollo 11 mission; it was a thing of the past and he moved on to other things. Unlike some other astronauts he refused to capitalize on his fame by doing commercials, etc.

Looking back at the July 1969, Moon landing, we can all be proud of the Grumman employees who contributed so much to it. Our country was also fortunate to produce a Neil Armstrong, who, I am sure will still be remembered 500 years from now.

LET YOUR VOICE BE HEARD

WRITE TO THE PULSE

The Pulse of Long Island is a newsletter for the members of the IEEE Long Island Section. You can let your voice heard by writing to the Editor. How to bring more value to our members? Interesting new technology, or a project? An issue of interest to members of the IEEE Long Island, Long Island engineers and computer professionals, or Long Island technical community at large? Write to the **Pulse**. Let your letter be read, and your voice heard.

HOW CAN I CONTRIBUTE TO THE PULSE?

Send your letters or articles via email to pulse@ieee.li. If selected for publication, the letter or article will be edited before being published.



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CONTRIBUTION DEADLINE:

20th of a month for the next month edition.

CONTRIBUTIONS FROM LONG ISLAND TECHNICAL & ENGINEERING COMPANIES:

Publish your technology-related press release (up to one page) at no cost. Please send the press release as a PDF file attached to email to pulse@ieee.li, addressed to the Editor, with a Subject line "Pulse -PR" followed by your company name, and the responsible contact person's name, email and phone number in the email body.



THE PULSE OF LONG ISLAND

CONTRIBUTE TO THE PULSE – LET YOUR LETTER BE READ and LET YOUR VOICE BE HEARD

REMEMBERING JESSE TAUB — A TRIBUTE

NIKOLAOS GOLAS

Awards Committee Vice Chair, IEEE LI Section

With great sorrow, I would like to announce to our IEEE Long Island Section members that our beloved **Awards Committee Chair, Jesse Taub** passed away on August 10, 2019 at the age of 92. His loved ones include his wife of 45 years Naomi Taub and, his children Richard, Jocelyn, and Suzanne (deceased), and his grandson Aaron. The services were held on Monday, August 12 at the Gutterman's Funeral Home in Woodbury.

I first met Jesse over 30 years ago while working as a young engineer for Eaton Corp. / AIL Division. Jesse was in charge of putting together the Dyer Seminar and I volunteered to try to get my colleagues to write and present their papers for the Dyer Seminar, which I did for a couple of years. Our paths crossed again in 2007 when I became the Secretary of the **LISAT Conference Organizing Committee** and Jesse was its **Technical Program Committee (TPC) Chair**. Our collaboration continued when I joined the **Awards Committee** in 2009, which Jesse chaired and worked together on identifying deserving candidates for awards and recognition in our IEEE Long Island Section. After that with Jesse being our Section Historian, we started working on founding **Historical Milestones** that took place on Long Island. The Section has established three (3) milestones as follows:

1. **Grumman Lunar Module, 1962-1972**
2. **First Blind Takeoff, Flight and Landing, 1929.**
3. **The First 2-Dimensional Nuclear Magnetic Image (MRI), 1973**

Over the years, we became close and along with his lovely wife Naomi and my wife embarked on tasting different cuisines on Long Island. We shared their love of traveling and archeology, He and his wife, Naomi, were both on the Board of the **Archaeological Institute of America/LI Society** and have traveled extensively to learn about the history of the ancient world.

He attended the 2019 IEEE MTT International Microwave Symposium (IMS) 2019 conference and exposition the first week of June 2019 at the Boston Convention & Exhibition Center in Boston.

To honor Jesse's legacy the **Awards Committee** would like to change the name of the **IEEE Long Island Section Lifetime Achievement Award to the Jesse Taub Lifetime Achievement Award**. This Award will commemorate and celebrate Jesse's immense contributions to the IEEE Long Island Section and to the Electrical and Electronics Engineering profession. This award is the highest honor that the IEEE Long Island Section bestows on an individual and it deserves to be identified with Jesse Taub's name who was the recipient of the inaugural **Lifetime Achievement Award** back in 2011.



A SHORT BIOGRAPHY OF JESSE FOLLOWS:

Jesse Taub received his BEE from the City College of New York in 1948 and his MEE from the Polytechnic Institute of Brooklyn (now NYU Poly) in 1949. He worked at the Naval Material Laboratory from 1949-1955 and Airborne Instruments Lab (AIL), now part of Harris, from 1955 to 1993 where for many years, he was their Chief Scientist, responsible for directing and planning R&D activities.

He published extensively on various aspects of microwave technology including millimeter and submillimeter wave components, filter design theory and microwave integrated circuits. From 1993 to the present he has been a consultant involved with millimeter wave and phased array technology. He was a member of the IEEE for over 70 years, joining as a Student Member and becoming a Fellow in 1967.

He was active in the **IEEE Microwave Theory & Techniques Society**, serving on its **Administrative, Technical Program** and Editorial Review Committees. He was the **Technical Program Co-Chair** of the 1988 International Microwave Symposium. He was the **LI Section's Awards Committee Chairman** and was on the **LISAT Technical Program Committee**. Mr. Taub contributed many articles on historical topics for Section's newsletter *The Pulse*.

HE HAS RECEIVED SEVERAL IEEE AWARDS INCLUDING:

- **Centennial Award in 1984**
 - **Third Millennium Medals in 2000;**
 - **IEEE-USA Division Leadership;**
 - **Region 1 William Terry Distinguished Service Award**
 - **Region 1 Award for Contributions to LISAT in 2007**
 - **IEEE Long Island Lifetime Achievement Award in 2011**
 - **IEEE Long Island Section Alex Gruenwald Award in 2018**
- AIL gave him the **Fowler Award for Outstanding Achievements in Engineering** in 1993.

CONTINUED ON PAGE 8 ►

JESSE TAUB: AN ENDURING LEGACY

“ I HAVE ENJOYED WORKING WITH JESSE ON SEVERAL IEEE PROJECTS INCLUDING THE LISAT CONFERENCE TECHNICAL PROGRAM COMMITTEE. JESSE'S GUIDANCE, KNOWLEDGE AND FRIENDSHIP WILL ALWAYS BE REMEMBERED. ”

Ron Pirich, Secretary, IEEE LI Section & LISAT Conference

“ JESSE TAUB WAS AN ENGINEER'S ENGINEER, IT WAS AN HONOR TO WORK WITH HIM. HE WILL BE GREATLY MISSED. ”

Sandy Mazzola, Treasurer, IEEE LI Section, Awards Committee, Historical Milestones Committee

“ JESSE TAUB'S PASSING IS A TREMENDOUS LOSS. HE WAS AN IEEE FELLOW WHO RECEIVED MANY AWARDS INCLUDING THE ALEX GRUENWALD AWARD; THE IEEE USA DIVISION LEADERSHIP AWARD; TWO REGION 1 AWARDS; AND THE CENTENNIAL AND THIRD MILLENNIUM MEDALS. JESSE WAS AN IEEE MEMBER FOR OVER 70 YEARS. HE MADE OUTSTANDING CONTRIBUTIONS TO THE LI SECTION INCLUDING THE LI SECTION AWARDS CHAIR AND THE HISTORICAL MILESTONE COMMITTEE. JESSE WAS ALSO THE LI SECTION HISTORIAN, AND HE FAITHFULLY CONTRIBUTED ARTICLES TO THE PULSE. I PERSONALLY THOUGHT OF JESSE AS A ROLE MODEL THAT I WOULD LIKE TO TRY TO EMULATE. WE ARE ALL VERY FORTUNATE TO HAVE BEEN AMONG HIS COLLEAGUES. ALTHOUGH I WAS SADDENED BY JESSE'S PASSING, I BELIEVE THAT HIS CONTRIBUTIONS TO HIS PROFESSION AND THE IEEE WILL LONG BE REMEMBERED. ”

Lou D'onofrio, 2018-2019 Chair, IEEE LI Section

“ I WILL FOREVER VALUE JESSE'S CONTRIBUTIONS TO THE IEEE AND WILL FONDLY REMEMBER HIM. ”

James Colotti, 1st Vice Chair, IEEE LI Section

“ I AM SO VERY SORRY TO HEAR OF JESSE'S PASSING. HE WAS A VALUABLE AND GENEROUS MEMBER OF THE IEEE. I AGREE WE SHOULD HONOR HIS LIFE AND ACCOMPLISHMENTS WITH AN AWARD NAMED IN HIS HONOR. ”

Arnie Stillman, 2nd Vice Chair, IEEE LI Section

“ I AM SO SAD TO HEAR THIS. HE HAS DONE SO MUCH FOR IEEE AND SBU. WE WILL MISS HIM. ”

Dr. Timothy Duong, Stony Brook University

“ SO SAD HEARING THIS. JESSE WAS A VERY INSPIRING CONTRIBUTOR TO THE ACTIVITIES OF OUR NUCLEAR AND PLASMA SCIENCES SOCIETY. MAY HIS FAMILY BE COMFORTED BY THE SUPPORT OF FRIENDS. ”

Shaorui Li, Chair, Nuclear & Plasma Sciences Society, Awards Committee

“ I AM SO SORRY TO HEAR THIS. JESSE TAUB WAS A REAL PLEASURE TO WORK WITH AND VERY DEDICATED TO THE PROFESSION AND IEEE. I AM HONORED TO HAVE KNOWN HIM AND WORK WITH HIM. I PERSONALLY THINK WE SHOULD WORK ON CREATING A SECTION AWARD IN HIS NAME. ”

Prof. Marjaneh Issapour, 2017 Chair, IEEE LI Section

“ SHOCKING NEWS. SO SORRY TO HEAR THIS. I JUST SAW JESSE AND HIS WIFE AT A DINER IN FLUSHING A COUPLE OF MONTHS AGO. I WALKED IN TO HAVE DINNER WITH MY WIFE AND JUST BY COINCIDENCE; WE GOT THE TABLE NEXT TO HIM. HE SAID HE WAS COMING BACK FROM AN IEEE CONFERENCE IN BOSTON AND STOPPED TO EAT TO WAIT FOR THE TRAFFIC TO WIND DOWN. HE WILL BE GREATLY MISSED. ”

Joe Jordan, Chair, Instrumentation & Measurement Society

“ VERY SAD NEWS INDEED FOR ALL OF US. I HAD THE PLEASURE OF KNOWING JESSE FOR MORE THAN 30 YEARS. I AM COPYING THE AIL COMMUNITY AS WELL. HE WAS A GEM, A RARE INDIVIDUAL WHO WAS TECHNICALLY SUPERIOR; HE WAS A FELLOW, A PEOPLE PERSON, A TEACHER AND A DEDICATED VOLUNTEER. A MODEL FOR ALL OF US TO TRY TO EMULATE. I WILL MISS HIM VERY MUCH. ”

Eduardo Palacio, 2020-2021 Director-elect, IEEE Region

“ EXTREMELY SORRY TO HEAR THIS. WE LOST A VETERAN MEMBER OF THE IEEE LI SECTION. HE WAS INSTRUMENTAL IN MANY DIFFERENT ASPECTS AND ACTIVITIES OF THE SECTION. MAY THE DEPARTED SOUL BE PLACED IN PEACE. ”

Dr. M. Nazrul Islam, 2016 Chair, IEEE LI Section

“ IT IS WITH A HEAVY HEART THAT I HAVE TO SHARE THE SAD NEWS OF PASSING OF ONE OF OUR OWN, JESSE TAUB. JESSE WAS A LONGTIME VOLUNTEER IN THE LONG ISLAND SECTION. I HAVE KNOWN JESSE FOR ALMOST 25 YEARS; AND THROUGHOUT THESE YEARS, JESSE DID NOT HESITATE IN HIS SERVICE TO THE PROFESSION AND TO THE IEEE. HE WAS THE SECTION AWARDS CHAIR ALL THE YEARS I HAVE KNOWN HIM. HE TOOK ON MANY OTHER VOLUNTEER POSITIONS OVER THE YEARS. HE NEVER SAID NO TO A CHALLENGE, NEVER SLOWED DOWN, & NEVER STOPPED BEING A MODEL OF PROFESSIONAL ETHICS, HUMANITY AND DECENCY. ”

Dr. Babak Beheshti, 2018-2019 Director, IEEE Region 1

CONTINUED ON PAGE 9

JESSE TAUB: AN ENDURING LEGACY

“ JESSE TAUB HAS BEEN A VITAL PART OF THE IEEE ORGANIZATION FROM THE TIME IT WAS KNOWN AS THE INSTITUTE OF RADIO ENGINEERS (IRE). HE BROUGHT HIS BOUNDLESS ENERGY AND WISE FOCUS TO HIS CAREER AS AN RF ENGINEER AND TO HIS VOLUNTEER ACTIVITIES INCLUDING THE IEEE. HE SERVED IN MANY DIFFERENT ROLES INCLUDING HISTORIAN AND AWARDS COMMITTEE CHAIR FOR THE IEEE LONG ISLAND SECTION OVER HIS MANY DECADES OF SERVICE. HIS INTELLECTUAL CURIOSITY AND FASCINATION WITH THE WORLD AND THE PEOPLE AROUND HIM WERE EVIDENT IN HIS INTEREST IN OTHER DISCIPLINES SUCH AS ARCHEOLOGY AND THE ARTS. JESSE WAS ALWAYS WILLING TO PROVIDE AN HONEST ASSESSMENT OF THE ISSUES UNDER CONSIDERATION WHEN ASKED, AND HIS REPLIES WOULD EXHIBIT A DEMEANOR OF CALM RESPECT AND GRACE WHILE STILL FORCEFULLY EXPLAINING HIS POSITION. HIS KINDNESS, ADVICE AND INSIGHT WILL BE GREATLY MISSED BY ALL WHO KNEW HIM. ”

Daniel Rogers, Co-chair Lisat Conference

“ AS THE BACKBONE OF LISAT'S TECHNICAL PROGRAM COMMITTEE AND ITS CHAIR OR CO-CHAIR SINCE THE VERY BEGINNING OF THE ONE-DAY CONFERENCE, JESSE HAS BEEN INSTRUMENTAL IN KEEPING LISAT A HIGH-QUALITY EVENT. HIS EFFORTS TO BRING IN REVIEWERS AND TO CREATE NEW LISAT SESSIONS HAS LEFT A MAJOR IMPACT ON THE CONFERENCE THAT HAS BEEN FELT OVER THE EVENT'S 15 YEARS OF SERVICE AND WILL BE FELT FOR MANY YEARS TO COME. AS A MEMBER OF THE LISAT ORGANIZING COMMITTEE JESSE NEVER HESITATED TO ADD THE WISDOM OF HIS YEARS OF MTT CONFERENCE EXPERIENCE TO HELP GUIDE LISAT CONFERENCE THROUGH SOME ROUGH SPOTS IN THE FIRST DECADE OF ITS GROWTH. HE WAS ALWAYS READY TO CONTRIBUTE DURING THE EVENT, TOO, AS A SESSION CHAIR. IT WILL BE DIFFICULT TO IMAGINE A LISAT WITHOUT JESSE, BUT WE WILL KEEP HIS SPIRIT ALIVE AND HONOR HIM BY MOVING FORWARD EVEN IN HIS ABSENCE. THANK YOU FOR ALL YOUR INSIGHT, ADVICE, PATIENCE, AND SUPPORT JESSE. WE WILL ALL MISS YOU. ”

Dr. Charles Rubenstein, Co-chair Lisat Conference

“ I HAD FIRST HEARD ABOUT JESSE TAUB WHEN I JOINED MITEQ IN MID-1980'S FROM MY COLLEAGUES WHO HAD WORKED WITH HIM AT AIL. THEY MENTIONED THAT HE WAS ONE OF THE BEST MICROWAVE R & D EXPERTS WHO HAD MADE TREMENDOUS CONTRIBUTIONS TO DEVELOPMENT OF NEW PRODUCTS AND ALWAYS TALKED ABOUT HOW HE WOULD SOLVE DIFFICULT TECHNICAL PROBLEMS. AMONG THOSE WHO HAD GREAT RESPECT FOR JESSE AS A PERSON AND HIS ENGINEERING SKILLS WAS THE PRESIDENT OF MITEQ AXEL KIIS. NATURALLY MY CURIOSITY PIQUED TO MEET AND KNOW JESSE UNFORTUNATELY I NEVER HAD THE OPPORTUNITY TO DO THAT TILL EARLY 2000'S WHEN I STARTED ACTIVELY PARTICIPATING IN THE EVENTS OF IEEE LONG ISLAND SECTION. WHEN I MET JESSE FOR THE FIRST TIME, I REALIZED HE WAS SINCERE MODEST AND SOFT SPOKEN FOR A MAN OF SO MUCH ACHIEVEMENTS AND WE IMMEDIATELY CONNECTED. SINCE 2014 WHEN I BECAME THE MTT'S CHAPTER CHAIR FOR THE LONG ISLAND SECTION JESSE HAS BEEN VERY SUPPORTIVE IN THE CHAPTERS ACTIVITY AS A MENTOR AND GUIDE. SINCE 2015 HE HAS HELPED AND PLAYED A VERY IMPORTANT ROLE AS THE TECHNICAL ACTIVITIES CHAIR IN THE ORGANIZATION OF THE VERY SUCCESSFUL MTT'S LONG ISLAND SYMPOSIUM TRENDS IN MICROWAVE. IT IS THRU THIS SYMPOSIUM THAT MY WIFE HARSHA AND I MET JESSE'S WIFE NAOMI WHO ALSO HELPED US IN THE SYMPOSIUM. WE ARE VERY PLEASED TO HAVE MET AND KNOWN THIS LOVELY COUPLE. WITH JESSE'S PASSING AWAY WE HAVE LOST A PRECIOUS FRIEND AND GUIDE WHO CAME INTO OUR LIVES. WE PRAY FOR THE PEACEFUL RESTING OF HIS SOUL IN HEAVEN AND TO GIVE NAOMI AND HIS FAMILY COURAGE AND FORBEARANCE FOR THIS GREAT LOSS. ”

Sai Padmanabhan, Chair, Microwave Theory And Techniques Society (MTT), IEEE LI Section

“ IT'S BEEN A REAL PLEASURE TO HAVE WORKED WITH JESSE ON OUR SECTION'S MILESTONES AND HIS RECENT ARTICLE ON THE EARLY DAYS OF WIRELESS. AN AWARD IN JESSE'S NAME IS AN EXCELLENT IDEA. I HAVE TRIED ON SEVERAL OCCASIONS TO GET JESSE TO CONSIDER PUBLISHING A BOOK ABOUT THE ENGINEERING COMPANIES ON LONG ISLAND BASED UPON HIS PULSE ARTICLES SPONSORED BY THE IEEE. SOMETHING FOR OUR IEEE LI SECTION TO CONSIDER. ”

Mort Hans, Historical Milestones Committee

IEEE Long Island Section Award Nominations

By Jesse Taub

Acknowledging the accomplishments of our peers is important to our profession. Each year, our Section gives several awards in various categories. You are encouraged to submit nominations for worthy candidates. You can find nomination forms on the ieeeli.org website. Section Award nominations must be sent to me no later than **December 1, 2019**. They will be reviewed by the Section's Awards Committee. The names of the Section Awards and their criteria are listed below:

ALEX GRUENWALD AWARD

This Award honors an IEEE member who has made important contributions to our profession on Long Island, and to the IEEE at large. Alex Gruenwald was an IEEE pioneer in the area of professional activities. He was a very active member of the Long Island Section, and went on to be a Region 1 Director.

ATHANASIOS PAPOULIS AWARD

This award is presented to educators in engineering, science, or mathematics, either living or teaching within the boundaries of the Long Island Section of the IEEE, who has demonstrated innovative teaching techniques. Athanasios Papoulis was a distinguished professor at Polytechnic University who was committed to promoting quality technical education on Long Island.

HAROLD WHEELER AWARD

This Award recognizes an IEEE member who has demonstrated outstanding technical and management abilities. Harold Wheeler was a world-famous engineer, who throughout his career at Hazeltine and Wheeler Labs, made many important technical contributions. He was a founding member of the IEEE Long Island Section.

VELIO MARSOCCI OUTSTANDING STUDENT CHAPTER AWARD

This award is given to an IEEE student chapter that is from one of the Long Island engineering schools. The award recognizes outstanding activities that encourage student interest in the IEEE. It is named in honor of Professor Velio Marsocci who, was an outstanding faculty advisor to the Stony Brook University IEEE Student Chapter for many years.

CHARLES HIRSCH AWARD

This Award recognizes an IEEE member who has made an outstanding technical contribution that has benefited Long Island. Charles Hirsch was a creative engineer at Hazeltine.

LIFETIME ACHIEVEMENT AWARD

This Award is given to a member who has demonstrated continual and distinguished leadership, outstanding career-long contributions and service benefiting the Engineering community and the IEEE LI Section. This award is the highest honor the IEEE Long Island Section bestows on an individual.

ORGANIZATION OF THE YEAR AWARD

This award recognizes a Long Island company, laboratory or educational institution involved with electrical, electronic or computer engineering for a noteworthy achievement. This award is intended to encompass a broad category of achievements. They can include areas such as a new product or system as well as providing significant assistance to the IEEE Long Island Section. Examples of this assistance include providing meeting space and or financial support of IEEE activities. We also wish to acknowledge new companies that are involved with IEEE activities.

OUTSTANDING VOLUNTEER AWARD

This award honors a Long Island Section member for substantial contributions to IEEE volunteer activities at the International, National, Region, Section, Chapter, or Society level.

OUTSTANDING YOUNG ENGINEER AWARD

This Award honors a Long Island IEEE member who has made important technical contributions prior to his or her 35th birthday.

AWARD NOMINATIONS

Each nomination must be received by December 1, 2019 and will be reviewed by our Section's Awards Committee. Each nomination should describe the nominee's accomplishments that relate to the Award criterion and should suggest a suitable citation. Those selected will be honored at our annual Awards Ceremony in the Spring of 2019. Nomination information for Region 1 and Fellow Awards will be given in future issues of *The Pulse*. Please send all nominations and questions to awards.ieee.li

A SALUTE TO CAPTAIN WILLIAM EDDY

Donald Christiansen
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World War II was still in progress when, in my senior year of high school, I visited the local Navy recruiter. He asked about my interests, and when I mentioned engineering he said there was a serious need for Naval radio and radar technicians. He asked about my subjects and grades, then suggested I take an examination covering mathematics and physics (the Eddy test), which, if passed, would qualify me for the special training program. I took it, passed, and was told I would have to complete my final term of high school; then the Navy would immediately send me to radio technician school. I complied and was sworn in and, with six other recruits who had survived the Eddy test, boarded a sleeper train for the Great Lakes Naval Training Center.

We were assigned to an all “radio tech” company for boot training. A strong rivalry existed between our company and the other companies, in part because we were sworn in as Seamen First Class, whereas the other recruits were Apprentice Seamen, and would only become Seamen Second Class at the end of boot training. One of the marching songs sung by the non-RT companies ended with the phrase “. . .so take down your service flag, Mother, your son is a [censored] RT.” One of our RT company marches went “They envy our sixty-six dollars, they envy our stripes one, two, three; they envy the pride of the Navy; they envy the Navy RT.

We had no idea why the test we had taken to determine our aptitude for the radio technician program was called the “Eddy” test until we reached pre-radio school in Chicago. We then learned that it was devised by Navy Captain William Eddy.



Bill Eddy's drawing of the sea-going “electroniker” courtesy of the U.S. Navy.

Although Eddy had retired from the Navy in 1934, when Pearl Harbor was attacked in 1941 he volunteered to return to set up a program to train much-needed radio technicians. He became Commanding Officer of the Naval Training School for Radio Materiel, and Radio Technician Procurement Officer.

At the outset, Eddy would interview prospective candidates for the new training program. But its growth and complexity made it clear that a standard admissions test was warranted. He then devised a series of multiple-choice questions that became known as the “Eddy Test.” It covered both the likelihood of the applicant to cope with the

mathematics and physics of complex Navy electronics equipment, and his native ability and interest in using the tools and instruments required to install, maintain, and repair it.

The Electronics Training Program (known by the Navy as the Radio Materiel School) was initiated as a two-phase program—a three-month Primary School (designated Elementary Electricity and Radio Materiel) and a five-month Secondary School (designated Advanced Radio Materiel School). But students entering the Primary School program did not find it easy, with unacceptably high failure rates.

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A SALUTE TO CAPTAIN WILLIAM EDDY

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The Navy, prompted by recommendations from Eddy, added a four-week Pre-Radio School, to be attended by all new students, in which they were subjected to an intensive review of fundamental topics plus an introduction to the slide rule.

Beginning in June 1943, three Chicago locations became the sites for permanent Pre-Radio Schools: Hugh Manley High School and two junior colleges, Wright and Herzl. I was assigned to Herzl. Enough classrooms had been converted to dormitories to accommodate the student body.

Pre-Radio included a review of high school math and physics, plus the issuance and use of a Cooke slide rule. Classes began at 7:30 a.m. and ran until 5 p.m. Organized sessions in problem solving ran until 9 p.m. Class time centered on math and the slide rule. Also ac and dc theory and electrical components. Lab work involved using test instruments, soldering, and machine shop practice. Exams were held Saturday mornings, and the results determined whether a student was allowed to continue in the program.

Upon completion of courses at Herzl, I was sent on to Primary School. Its three-month program was designed to emphasize fundamental topics covered in the first two years of an electrical engineering curriculum. Weekday classes were eight hours. A mandatory study period followed in the evening. We were issued a pair of textbooks by Frederick Terman: *Radio Engineering and Radio Engineers' Handbook*. Today both are safely preserved on my library shelves.

We built several electronic devices, including a superheterodyne receiver. At the conclusion of the testing of mine, my instructor told me I could keep it. I packaged it to send to my dad from the base post office. Back at my dorm I received a notice to report to the postal manager. He had cut open the carton. I thought I was in trouble for attempting to send Navy property off the base. But he had discovered a note I had enclosed in the box. "No handwritten notes allowed!" he told me. I removed it, resealed the box, and home it went!

Advanced Radio School, the third and final phase of the RT/ETM training program, took place at several Navy installations where students were exposed to both the theory and practice of the Navy's latest proprietary electronics gear.

EDDY'S OTHER SIDES

Seen as an electronic genius by many of his colleagues, Eddy nevertheless was something of a character. At Annapolis he nearly failed to graduate by accumulating 148 demerits, only two short of the 150 required for expulsion. He operated a sub rosa skating rink in his Annapolis dormitory until it was discovered by an officer.

Prior to World War II, Eddy had served on the cruiser USS *Cincinnati* in Nicaragua and, later, China. In 1928 he was transferred to the submarine service where he developed an improvement in tracking techniques and qualified as the youngest submarine commander to do so without attending submarine school. He also designed the Submarine Warfare "Dolphins" Insignia (still in use when I last checked).

At the Submarine Base in New London, Connecticut, Eddy set up a laboratory to research underwater sound gear and radio transmissions from a submerged location. When he retired from the Navy in 1934, he joined the laboratory of Philo Farnsworth as a member of the team that designed all-electronic television. Later, at RCA, he was awarded 43 patents.

THE ARTIST

Eddy was also a self-taught artist. He created the logo for Radio Chicago Naval Training Schools. He gained recognition worldwide as the cartoonist for the Honeywell calendar beginning in 1938 and continuing after World

War II. The cartoons were populated by electronics engineers, technicians, and assorted managers in, usually, an industrial setting involving state-of-the-art electronics gear. His characters were often portrayed as less than astute, with dialogue to match. Occasionally a friend or acquaintance of his would end up in a particular scene. One wrote to Honeywell threatening to sue for defamation of character unless they would give him the original to hang in his office.

Many electronics engineers got their impetus to pursue that career from the Navy RT program. Ron Jurgen, senior editor of *IEEE Spectrum*, was himself an RT during World War II, and, indeed, later became a 1950 graduate of R.P.I. with a B.E.E. degree. In 1975 I suggested to Ron that he interview Captain Eddy for an article "The Man Who Launched a Thousand EEs." Ron brought back from the interview a few original Eddy cartoons. One of them hangs in my office. In it a group of engineers and quality-control inspectors huddle around a complex piece of equipment called the Bi-Articulated Digital Phlymsl Simulator. It is about to be crated for shipment, but sparks and smoke emanate from it during final test. A supervisor advises one of the technicians, "No, Spencer, you can't just lengthen a short circuit!" On the wall behind the smoldering equipment hangs the Quality Department's motto: "They Shall Not Pass."

EDDY'S RETIREMENT(?) YEARS

When Ron Jurgen visited Captain Eddy in 1975 at his home in Michigan City, Indiana, he found it "a unique game preserve of sorts." Eddy and his wife had begun sheltering disabled and abandoned animals and birds many years earlier, gaining a special permit from the U.S. government to operate the sanctuary. Ron also was privileged to view many examples of Eddy the artist, including beautiful oil paintings, ceramic sculptures, and intricate wood carvings.

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PART 1 of a SPECIAL 3-PART SERIES

FIGHT FOR THE MOON

Dedicated to the 50th Anniversary of the First Manned Moon Landing*

Dr. Yuri Okunev
2007 IEEE Charles
Hirsch Award recipient

*Translated by Anna Tucker

CHRISTMAS EVE OF 1968

On December 24, 1968 the crew of Apollo 8 was completing their ninth orbit around the Moon. The sun had just set over Houston and Christmas Eve had arrived. Hundreds of millions of people on Earth, in all the countries except the USSR and her socialist allies, were watching the live TV broadcast from the lunar orbit. After a shot of the lunar landscape Bill Anders opened the flight plan and said: *"We are now approaching Lunar sunrise, and for all the people back on Earth the crew of Apollo 8 has a message that we would like to send to you."*

The story of the Apollo 8's astronauts' message is dramatic and amazing. The first amazing thing was the fact that neither the American government nor any NASA officials had anything to do with the message and did not even know it existed; the message was wholly the astronauts' idea. The second amazing thing is the fact that they did not blare any propaganda from space, but found within themselves the respect deserved by the great words they read. Finally, it is amazing that these simple men understood their historical mission better than any career politician or scholar of history. That message ended the race to the Moon between the two superpowers and became an important point in the fight between the atheists and the believers for the souls of humanity and in the ideological conflict of the 20th century between the totalitarianism and freedom.

The lifeless lunar landscape passed by the spacecraft's window and the sunlight sharply divided it into the light and dark, into the lunar day and lunar night, and they were leaving the light and entering the dark abyss. Bill Anders picked up the flight plan and quietly started reading and the great words of the ancient prophets that had once been uttered on Earth by the cradle of the human civilization and had come the long 3,000 year way with it to be delivered by the humans to the orbit of the Moon and broadcast by the Apollo 8's radio back to Earth through the hundreds of thousands of kilometers of space. *"In the beginning God created the heavens and the earth. Now the earth was formless and empty, darkness was over the surface of the deep, and the Spirit of God was hovering over the waters. And God said, 'Let there be light,' and there was light. God saw that the light was good, and he separated the light from the darkness."*

Only these famous words, wise, profound, and poetic, fit the importance of the moment. Millions of people on Earth sat still in front of the TV screens. In Houston, Valerie Anders whispered shakily: "Bill is reading the Bible to the Moon". Jim Lovell took the text from Bill and continued: *"God called the light 'day,' and the darkness he called 'night.' And there was evening, and there was morning—the first day. And God said, 'Let there be a vault between the waters to separate water from water.' So God made the vault and separated the water under the vault from the water above it. And it was so. God called the vault 'sky.' And there was evening, and there was morning—the second day."*

Millions of believers felt that the miracle they had been long waiting for had finally happened and the much desired victory that they had hoped for despite the frightening reality of the 20th century, had finally come. In Houston, Marilyn Lovell, who had not quite believed that a man was able to accomplish something so grand, thought humbly: "They must be in God's hands". Jim passed the text to Frank Borman and Frank went on: *"And God said, 'Let the water under the sky be gathered to one place, and let dry ground appear.' And it was so. God called the dry ground 'land,' and the gathered waters he called 'seas.' And God saw that it was good."*

Millions of believers and non-believers felt that something mysterious and magnificent was happening in front of their eyes. Those who could look ahead also understood that the human history that had so far been rolling inevitably downhill towards Hell suddenly and unexpectedly turned its face up to Heaven. For the first time millions of people simultaneously held their breath and choked with emotion. In Houston, Susan Borman wept. Frank Borman looked out of the window. The lunar night was approaching quickly. In a few seconds the Sun was going to set behind the Moon's horizon and Apollo 8 would enter the darkness again. Frank took a deep breath and finished: *"And from the crew of Apollo 8, we close with good night, good luck, a Merry Christmas, and God bless all of you – all of you on the good Earth."*

And so three American astronauts victoriously concluded the immense technological and ideological fight for the Moon that occurred in the middle of the 20th century. Over two billion people on Earth breathed a sigh of relief – God is with us!

THE GRAND SPACE CHALLENGE OF THE SOVIET UNION AND THE GAUNTLET THROWN DOWN

In the decade of mid-50s to mid-60s the USSR was the world leader in the field of rocket and space technology and was ahead of its only competition, the USA, in the power of the rocket engines as well as the accomplishments in space and the military rocket building. At the point of that leadership was the first manned space flight.



Apollo 8 Astronauts

I remember well the Moscow of April 12, 1961 and the genuine jubilation of her people when that otherwise unremarkable spring day suddenly became the day of a world-wide importance. That morning I was at the Ministry of Communications. Suddenly the multitude of bureaucrats in the endless hallways of the huge Central Telegraph building halted & started buzzing. Abandoning their respectable laminar flow they headed for the central lobby where the Moscow radio could be heard broadcasting something at high volume. The unmatched voice of Yuri Levitan that made you heart pause and shivers run down your spine carried over the planet with growing power: *"Moscow speaking. All the radio stations of the Soviet Union are broadcasting. Today, on April the 12th of 1961 at nine hours and seven minutes Moscow time the spaceship Vostok was launched from the Baikonur cosmodrome carrying on board a man. Major Yuri Alexeyevich Gagarin, upon completing a flight around the Earth, successfully landed at ten hours and fifty-five minutes near the village of Smelovka of Saratov region. This is the first manned flight into space. Glory to the Soviet scientists, engineers and technicians. Glory to the Soviet people, the builder of the Communist society."*

This was followed by the powerful song by Isaac Dunayevsky *Wide Is My Motherland*. The world was amazed by the outstanding scientific and technological achievement of the Soviets and realized that it had missed a great military and political challenge of the Communists and the beginning of the last crucial stand that the Communists started. The words of the proletarian anthem *"This is our last and crucial battle"* were coming true in space. It is curious that the political and military leaders of the West had not fully anticipated this challenge despite the fact that they had had reasons to believe it was coming even before Gagarin's flight.

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FIGHT FOR THE MOON

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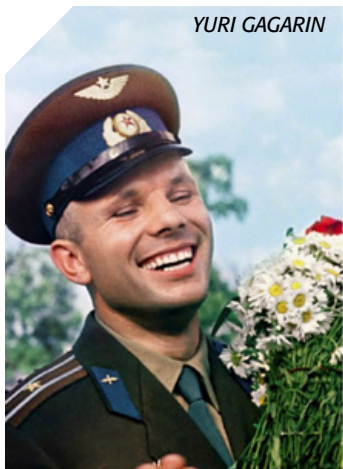
In May of 1957 at the secret proving ground Tura-Tam in Kazakhstan (which later became the Baikonur cosmodrome) the first in the world military intercontinental ballistic missile R-7 with the powerful RD-107 and RD-108 engines was tested. Both the rocket and the engines had been created by the engineering teams of S.P. Korolev and V.P. Glushko. On October 4, 1957 this rocket launched the first man-made satellite, and in May of 1958 it carried a geophysical laboratory that weighed in at 1327 kilograms. In January of 1959 the automatic space station Luna 1 having reached the second stage and for the first time having left the geocentric orbit passed close by the Moon. In September of 1959 Luna 2 for the first time reached the Moon's surface and delivered a Soviet pennant. During 1960 and the beginning of 1961 five satellites and two new heavy satellites were launched into Earth's orbit.

The Soviet scientists and generals reported to the political leadership of the country that the invincibility and unreachability of the USA were the things of the past and the USSR could deliver a hydrogen bomb to any location on the American continent. In 1959 R-7 was put into military use and the Soviet Armed Forces acquired a new branch, the Strategic Missile Forces lead by a marshal of the artillery Mitrofan Nedelin. The new missiles were aimed at the cities and military bases in the US. A huge space industry was developing in the USSR. By the early 1960s there were three rocket corporations headed by S.P. Korolev, M.K. Yangel, and V.N. Chelomey and the rocket engine corporation of V.P. Glushko. The factories in Moscow, Samara and Dnepropetrovsk were producing new rockets and space launch systems.

The Soviet Union rapidly increased its record achievements in space leaving no chance to America to prove itself. Less than four months after Gagarin's flight, on August 6, 1961 the spaceship *Vostok 2* piloted by German Titov orbited the Earth 17 times and proved the possibility of long-term human survival in space.

THE FIRST COSMONAUTS: YURI GAGARIN AND GERMAN TITOV

"He who owns space owns the world" was the new slogan of the world-wide revolution. In the socialist camp there was an elevation of spirits. Finally, socialism proved its advantages over capitalism in the scientific and technological field and the abstract concepts of the Marxo-Leninist classics turned into the unbeatable achievements of the Soviet space technology. The feelings of the intellectuals who never accepted the communist ideology of the Soviet totalitarianism, both in the West and in the Soviet Union, were more complicated. As far as Stalin's regime went, it all seemed quite clear.



YURI GAGARIN



GERMAN TITOV

That regime had been based upon on the slave labor of prisoners, collective farmers, powerless workers and terrorized intellectuals. That regime and its achievements were unacceptable by default. Now the time of Khrushchev came and millions of political prisoners were released from the concentration camps; the industrial workers, doctors, teachers and engineers were assigned their quite decent private apartments for the first time in forty years. Even the yoke of *kolkhoz* was loosened a little and the slave labor was replaced by financial and creative motivation.

However, the totalitarian essence of the regime never changed and yet the socialist achievements grew. Those who resisted the totalitarian government started to have frightening doubts. What if the despised classics had been right and totalitarian socialism was indeed more efficient than democratic capitalism? In this case, what was their resistance and fighting worth?

We have to give credit to the US President John Kennedy. He soon enough realized what the Soviet hydrogen bombs meant combined with domination in space and what a powerful ideological weapon was the mere fact that the USSR dominated in rocket building. Besides, Kennedy quickly appreciated the chance he had been given to earn his place in history. A little over a month after Gagarin's flight, on May 25, 1961, after consulting with the director of the NASA's Space Flight Center in Huntsville, AL, Wernher von Braun, John Kennedy gave a historic speech at the joint session of Congress. He admitted that the Soviet Union had beaten America in the space research and military technology due to the successes of the Soviet scientists and engineers in the development of more powerful rocket engines than those of the US. At that session of Congress President Kennedy declared landing an American on the Moon and his safe return to the Earth within the next decade the most important goal of the American nation.

This date of May 25, 1961 should be considered the start of the race to the Moon between the USA and the USSR. That race turned out to be more important for mankind than the fact of a man landing on the Moon by itself. Back in those days the Soviet Union had a huge lead in space exploration, but America challenged it by setting a long-time dream and fantasy of the human race to visit the Moon as a realistic goal. A technological battle commenced. It involved immense financial and the best intellectual resources of the two superpowers.

CLASH OF THE TITANS

The next few years after Yuri Gagarin's and German Titov's flights saw the continued impressive and bold triumph of the Soviets in space. From 1962 to 1965 one hundred and three man-made satellites of the Kosmos series were launched into orbit. In August of 1962 the spaceship *Vostok 3* piloted by cosmonaut A. Nikolaev was launched and *Vostok 4* with the cosmonaut P. Popovich was orbiting the Earth. It was the first group flight that lasted more than 70 hours and that broadcast the first TV programs from space. In June 1963 the second group flight by *Vostok 5* and *Vostok 6* piloted by the cosmonauts V. Bykovsky and V. Tereshkova set the record at 72 hours and delivered the first woman into space. In October 1964 a new three-person spacecraft *Voskhod* with the cosmonauts V. Komarov, K. Feoktistov and B. Yegorov equipped with soft landing gear launched into orbit. In March 1965 *Voskhod 2* equipped with an airlock for performing extra-vehicular activities with the cosmonauts P. Belyaev and A. Leonov was launched and the first man walked in space. This was all done for the very first time in the whole world. All the launches were successful. The Soviet space equipment worked flawlessly. The more and more complicated goals were reached consistently and on time.

In 1964 the Central Committee of the Communist party of the Soviet Union adopted a secret resolution that declared the landing of man on the Moon the priority goal of the Soviet space program. This resolution was backed by the emotional directive of the First Secretary of the Central Committee and the Chairman of the Council of Ministers of the USSR Nikita Khrushchev: "*Do not give the Moon up to the Americans! We will find all the funds necessary.*" Despite the secret status of the resolution, the measures were taken to leak some information into the media for propaganda reasons. The media immediately came up with a new slogan: "*A Soviet citizen will be the first human on the Moon.*" A Soviet citizen, meanwhile, was already training in a cosmonaut team and it was quite clear when that man was going to land on the Moon: In 1967, of course, to mark the 50th anniversary of the Great October Revolution.

The Space Race led by the Soviet Union was gaining momentum. In February 1965 the final draft of the Soviet lunar launch system was signed into production. The Soviet engineers were putting the last touches on the spaceship *Soyuz* that weighed in at over six tons and was to carry a man to the Moon. In the USA the engineers started working on the lunar module Apollo. At Baikonur a launch vehicle for the giant rocket N1 was being readied. N1 was to launch into the Earth's orbit an Earth to Moon complex that weighed in at about 60 tons.

In the US they were working hard on a similar huge rocket *Saturn V*. By early 1967 the Space Race had turned into an intense political and technological duel of the two superpowers that caused human casualties.

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FIGHT FOR THE MOON

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Both sides were in a rush and the first attempts to launch the first lunar modules *Apollo* and *Soyuz* into orbit ended in their destruction and death of their crews. On January 27, 1967 three American astronauts, Virgil Grissom, Ed White and Roger Chaffee burned alive in the cabin of *Apollo 1* during a launch rehearsal test that was scheduled for four weeks later. On April 23, 1967 the Soviet Union was the first to launch the lunar module *Soyuz 1* piloted by Vladimir Komarov into low Earth orbit. According to the flight plan it was supposed to rendezvous with *Soyuz 2* with three cosmonauts on board and work on practicing all steps of docking and putting together the lunar complex. However, technical problems plagued *Soyuz 1* from the very first minutes of the flight. First, one of the solar panel failed to unfold. Then the main radio quit and finally the orientation detectors failed. Between orbits 7 to 13, in the span of nine hours, Vladimir had no communications with the Mission Control Center near Moscow. When the communications were restored, Komarov reported the total loss of control of the ship and asked to let him talk with his wife for the last time. Cosmonaut Vladimir Komarov bravely fought for his life and at orbit 17 by some miracle managed to fire the retrorockets and reenter the Earth's atmosphere. He seemed to have been saved, but then the main parachute did not unfold. As the last desperate attempt to save his life Vladimir deployed the manually activated reserve chute, but it was too late. The fireball of *Soyuz 1* fell to Earth at about 140 km/h south of the Ural mountains in Russia.

The tragic failures of *Apollo 1* and *Soyuz 1* made the USA and the USSR revise the designs of the spacecrafts and postpone manned flights. However, the speed of the race and the anxiety grew. In April 1968 *Kosmos 212* and *Kosmos 213*, the test spacecraft of the *Soyuz* series, docked in the Earth orbit. In September 1968 the Soviet automated interplanetary space station *Zond 5* that closely resembled a full-size lunar module, successfully reached the orbit of the Moon, orbited the Moon, returned to the Earth and performed a soft landing in the Indian ocean. For the first time the world saw a return of living creatures from the Earth from the lunar orbit to the Earth at escape velocity. It was only turtles, but it was clear that the Soviet Union was about to launch a mission to the Moon. In October 1968 both sides almost simultaneously resumed manned flights. On October 11 Walter M. Schirra, Donn F. Eisele and R. Walter Cunningham began a successful 11-day Earth-orbital test flight on board *Apollo 7* to check out the redesigned Block II CSM. On October 25 and 26 an unmanned spacecraft *Soyuz 2* and a manned *Soyuz 3* piloted by G. Beregovoy achieved a rendezvous. Beregovoy manually guided his ship to docking distance and later successfully descended and soft-landed back on Earth.

By December 1968 it looked like the most important steps of a lunar mission, including reaching Earth-orbit, traveling to the Moon, orbiting it and returning to the Earth, have been worked out by both sides. The remaining issue was the readiness of the carriers *Saturn V* and *N1* that were to launch to Earth-orbit the heavy lunar modules to take the astronauts to the surface of the Moon and command modules to orbit the Moon and return the crew to the Earth. Still, by December 1968 it became clear that the Space Race was on its home straight. Either party could make the final push and reach the goal first.

The Americans believed that they had finally caught up with the Russians, yet understood that the top-secret and unpredictable Soviet space program could surprise them like it had before. They thought it was necessary to hurry. The new NASA Administrator Thomas Paine was faced with a dilemma either to conduct further unmanned testing of *Saturn V* or risk launching a manned flight.

On the other hand, the Russians possessed much more information of the Americans' plans and realized that their time was running out. Still, they were counting on the Americans not risking sending a crew to the Moon without additional test launches of *Saturn V* that so far had only carried unmanned flights and not always successfully.

However, the Americans could not bear the intensity of the race any longer and took the risk. It happened early morning of December 21, 1968, a Saturday, at the John Kennedy Space Center at Cape Canaveral in Florida.

At 6:51 five giant rocket engines in billowing smoke and fire launched the three thousand tons of *Saturn V* into the sky. At the top of the rocket in the command module of *Apollo 8* three astronauts, Bill Anders, Jim Lovell and Frank Borman were pushed back into their seats by acceleration by G-forces. They were carried into immortality and carried with them an unremarkable sheet of paper with their historic message to the people of the Earth that was to be read from the orbit of the Moon. Having burned 2,500 tons of fuel *Saturn V* brought to Earth orbit the 100 tons of the third stage carrying *Apollo 8* and its crew. They orbited the Earth twice, like many American and Russian astronauts before them. At 9:41, however, something unprecedented in planet Earth's history occurred.

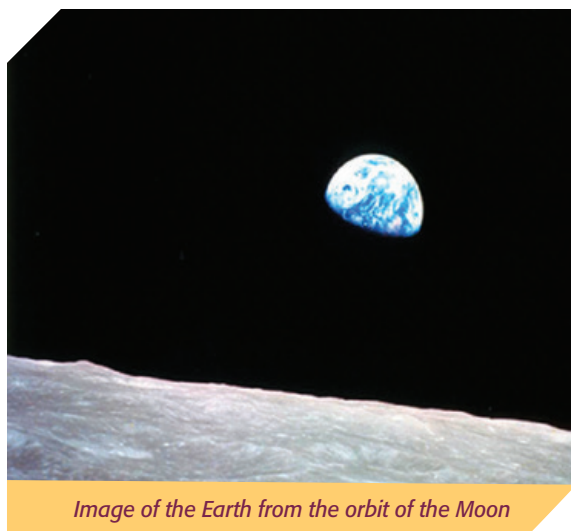


Image of the Earth from the orbit of the Moon

At Mission Control in Houston Fight Chief Cliff Charlesworth asked everyone involved the same fateful question: "Yes or no?" Everyone responded with a "yes". Cliff nodded to Mike Collins and Mike calmly and quietly told the astronauts on the radio that they were go to leave Earth.

The third stage burned 80 tons of fuel and increased the speed of *Apollo 8* to 39,000 km/h over the span of five minutes. *Apollo 8* broke away from the Earth's gravity and launched for the Moon. Three men in a small ship were leaving the Earth. The three men saw their white and blue planet from a distance for the first time. The planet was getting smaller and smaller and turned into a tiny shining ball in the vast emptiness of the Universe. On the second day of the flight *Apollo 8* entered the Moon's gravitation sphere of influence and started accelerating. Attracted by this new powerful force, it entered the zone of no radio contact with Earth and temporarily lost communications with Houston.

These were the most intense moments of the flight. Out of the radio contact with the Earth the Service Propulsion System engine ignited automatically at the command of the onboard computer and place the ship into the orbit around the Moon. A tiniest miscalculation or an execution mistake could lead to disaster and *Apollo 8* would strike the Moon or end up in an unstable orbit that would not allow it to ever return to the Earth, or be flung past the Moon into infinity. In Houston everyone was watching the clock. Every fifteen seconds Jerry Carr said into the microphone: "*Apollo 8, Apollo 8, this is Houston...*" If at 4:29 there was no response that would mean that the unthinkable had happened and that would in its turn mean that America lost the Space Race. The response came at 4:30 when the radio wave brought the voice of Jim Lovell: "*Go ahead, Houston. The SPS engine ignited on schedule and burned for 4 minutes and 6 ½ seconds.*"

These words crossed the finish line of the Space Race and put an end to the space battle of the century. The spaceship *Apollo 8* appeared from the dark side of the Moon into the light of the Earth. America won the Space Race!



Dr. Yuri Okunev received his Ph.D. in Electrical Engineering from St.Petersburg State University of Telecommunications, Russia, where he was the head of Digital Communication Laboratory – a university research center focusing on radio systems. The laboratory pioneered in OFDM technology and received a worldwide recognition for innovations in the field of phase-difference modulation techniques (DPSK). In 1993 Yuri Okunev moved to the United States and since then has been working in the American telecommunications industry. Working for leading American telecommunication research centers, such as Bell Labs of Lucent Technologies, PC-Tel, and Symbol Technologies/Motorola. Dr. Okunev is an author of 14 scientific books, numerous scientific papers on the modulation and encoding theory and optimal signal processing, 45 patents including 30 US patents, and 11 contributions to ITU standards. His monograph "Phase and Phase-Difference Modulation in Digital Communications" (Artech House, Boston-London) explores issues of modem and wireless system design. In 2007 Dr. Okunev was given the IEEE Charles Hirsch Award "for outstanding contribution to the Phase modulation theory and wireless system design".



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OCTOBER 2019

OCTOBER 11

*The LI Chapter of IEEE
Communication Society and
Hofstra University: Internet
Communications Panel:*

**SATELLITE, WIFI and CELLULAR
WIRELESS COMMUNICATIONS:
STRENGTHS, WEAKNESSES
and FUTURE GROWTH**

SPEAKERS: Howard Hausman,
Dr. Arnab Roy and Rui Yang

Hofstra University,
Adams Hall, Room 208,
Hempstead, Long Island

TIME: 4:00 PM - 5:30 PM

OCTOBER 17-18

**IESC 2019:
INTERNATIONAL ENERGY
and SUSTAINABILITY
CONFERENCE 2019**

Farmingdale State College,
2350 Broad Hollow Road,
Farmingdale, Long Island



NOVEMBER 2019

NOVEMBER 7

IEEE LONG ISLAND SECTION POWER ELECTRONICS SYMPOSIUM 2019

Radisson Hotel, 110 Motor Parkway, Hauppauge, Long Island

TIME: 12:00 PM - 8:00 PM

LOOKING FOR AN UPDATE ON SECTION EVENTS?

FOR UPDATES ON ALL
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EVENTS, CHECK OUT
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IEEE computer society

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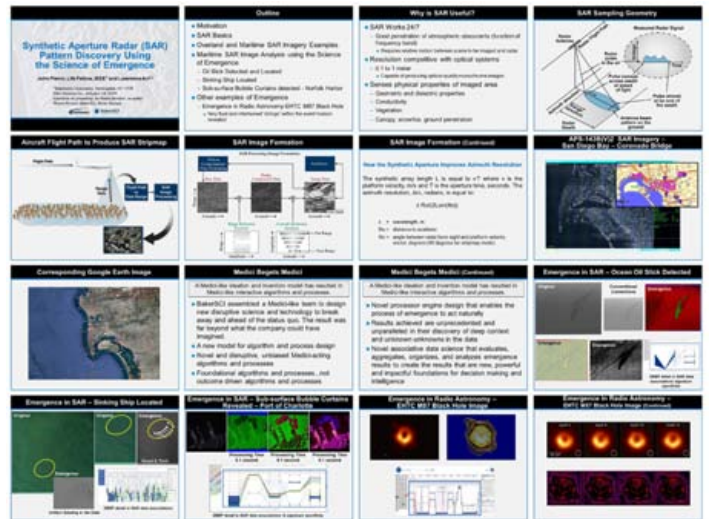
Computer Society Chapter invites you to present your project or your experience. For one of the upcoming meetings, we'd like to mash technical and social, and have several presenters presenting interesting computer-related topics in a shorter timeframe, fostering conversation. This is an opportunity to meet each other, learn about our work and possibly identify opportunities for collaboration.

Contact IEEE Computer Society Chapter at computer@ieee.li with your suggested topic.



John Pierro, IEEE Life Fellow, Wins Award at MSS Tri-State Radar Symposium

John Pierro (IEEE Life Fellow) of Telephonics was recognized for a Synthetic Aperture Radar (SAR) poster-style presentation along with Robert Brinson of Baker SCI at the MSS Tri-Service Radar Symposium last June. Their third-place award recognized the authors' presentation on "Synthetic Aperture Radar (SAR) Pattern Discovery Using the Science of Emergence". The presentation began with a discussion of SAR basics and how an aircraft's flight path is used to produce a SAR strip map. Next, an overview of the processing required for SAR image formation was discussed which included a comparison with optical imagery. At the heart of the discussion is the unbiased Medici-acting algorithms and processes that result in "new, powerful and impactful foundations for decision-making and intelligence".



John Pierro and Robert Brinson also coauthored a supplemental paper entitled "Synthetic Aperture Radar (SAR) Pattern Discovery Using the Science of Emergence".

The Tri-Service Radar Symposium (TSRS) is an annual meeting of radar engineers, scientists, and technologists. The Symposium evolved from the Synthetic Aperture Radar Symposium, first held by the University of Michigan in 1955. The change from university to military sponsorship in the late 1960s expanded the event by providing a forum for presenting a wider range of radar technology programs, from Research and Development (R&D) through current fielded systems of the Army, Navy, Marines, Air Force, and Coast Guard.

The Long Island Chapter of IEEE Communication Society and Hofstra University are presenting an Internet Communications Panel:

SATELLITE, WIFI and CELLULAR WIRELESS COMMUNICATIONS: STRENGTHS, WEAKNESSES and FUTURE GROWTH

**DATE:**

Friday, October 11, 2019

SPEAKERS:

Howard Hausman,
Dr. Arnab Roy and Rui Yang

LOCATION:

Hofstra University,
Adams Hall Room 208,
Hempstead, NY 11549

TIME:

4:00 PM - 5:30 PM

WHO SHOULD ATTEND?

- (1) Anyone interested in the current technologies used in Internet Communications.
- (2) Engineers, Students, Faculty and Managers involved in or are curious about the latest trends in satellite and ground based communications systems.

PANEL:**Satellite Communications:**

Howard Hausman,

*President/CEO, RF Microwave Consulting Services, Inc.
and Adjunct Professor at Hofstra University*

WiFi Internet:

Rui Yang, InterDigital, Inc.

Dr. Arnab Roy, InterDigital, Inc.

ABSTRACT:

The Internet is growing exponentially. People want to be connected wherever they are, inside or outside, moving or standing still, on the ground, in an airplane or on a ship. The three primary technologies for delivering Internet content are Satellite communications, Wi-Fi Communications or Cellular Communications. Each technology has a significant piece of the pie. What are the differences, why is one technology more applicable than another for an application? What is the future for each technology? The panelists will explain the technologies, the current trends and growth paths. Audience participation and questions are encouraged.

SEMINAR COORDINATORS:

Howard Hausman and Philip M. Coniglio

SPEAKER'S CREDENTIALS:

Howard Hausman received his MSEE degree from Tandon School of Engineering, NYU. He is currently President/CEO of RF Microwave Consulting Services and an Adjunct Professor at Hofstra University. He has designed hardware, wrote papers and lectured around the world on microwave systems and components for Satellite Communications, Space Systems, Radar and Reconnaissance systems.

Dr. Arnab Roy

received his B.E. in from University of Mumbai, India, and his M.S. and Ph.D. in Electrical Engineering from Penn State University. He is currently with InterDigital, where he is working on technology development for next generation cellular systems.

Rui Yang received his Ph.D. degree in Electrical Engineering from University of Maryland and the EMBA degree in Business Administration and Management from Hofstra University. He is currently a Director of Engineering at InterDigital, Inc., working on Wi-Fi and 5G research and standardization.

REGISTRATION and TIME:

The presentation will begin at 4:00 PM. Pizza & beverages will be served starting at 3:45 PM. Seating is limited. Registration is not required but encouraged. The IEEE VTools registration link is:
<https://events.vtools.ieee.org/m/201759>

To obtain a Hofstra Campus map go to

https://www.hofstra.edu/pdf/infocenter_print_campusmap.pdf.

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Technology,
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MICHAEL VOLTZ
Director,
Energy Efficiency
& Renewables,
PSEG-Long Island

WHO SHOULD ATTEND?

- Students/researchers
- Faculty and other academic representatives
- Small and large business representatives
- Home owners who would like to know about saving money on their energy bills
- Any domestic or international individual or corporation interested in energy related fields

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IEEE LONG ISLAND SECTION POWER ELECTRONICS SYMPOSIUM 2019

WHO SHOULD ATTEND:

All professionals (engineers, managers, etc.) involved in the use, design, qualification, test or manufacture of power supplies, power converters, power management, servos or energy storage are invited. All sectors of power electronics are represented including military, industrial, medical, space, consumer and automotive. Students and Faculty are also invited.

REGISTRATION:

General Registration is Free:
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EXHIBITORS INCLUDE:

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PRELIMINARY SCHEDULE:

Noon - 1:00 PM	Complimentary Networking Lunch
Noon	Exhibits Open
1:15 - 1:45 PM	Keynote Address
2:00 - 2:45 PM	Technical Lectures #1 and #2 – TBA
3:00 - 3:45 PM	Technical Lectures #3 and #4 – TBA
4:00 - 4:45 PM	Technical Lectures #5 and #6 – TBA
5:00 - 5:45 PM	Technical Lectures #7 and #8 – TBA
6:00 - 8:00 PM	Complimentary Networking Dinner with Cash Bar

CHECK OUT THE 2018 PICTURES & PRESENTATIONS:

<https://www.ieee.li/pes/2018>

MORE INFORMATION:

<https://www.ieee.li/pes>

Arrive Anytime, Leave Anytime,
from Noon to 8 PM

FOR QUESTIONS, FURTHER INFORMATION OR MATERIAL SUBMISSION:

- **Ron De Luca**, IEEE LI PELS Chair, 631-786-1091, rdeluca1144@gmail.com
- **James Colotti**, IEEE LI Section Second Vice Chair, 631-755-7352, colotti@ieee.org

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Being elevated to senior member recognizes people who have moved beyond entry-level work in their careers. It also encourages them to engage more broadly with engineers and other technical professionals in companies and universities outside their own. To be eligible for senior member status, members must have worked in a professional capacity in a technical field for at least 10 years. Educational experience is partially credited toward that time. Nominees must also have professional references from three IEEE senior members, Fellows, or honorary members. If you're interested in elevation, you don't have to wait to be nominated—you can nominate yourself.

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The Section is inviting you to record your stories and histories in our monthly publication, the *Long Island Pulse*. An article of approximately 300 – 350 words is recommended.

LET US HEAR FROM YOU.

Send your article to: pulse@ieee.li
c.c. Life Member Chair: life@ieee.li

life 
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IEEE LIFE MEMBERS

Write for Pulse!

The **IEEE Long Island Section** has held meetings with many of our Life Members and Senior Engineers, in recent months. Your stories and histories in engineering are interesting, inspiring and should be recorded for future generations. You have served your profession for many years, many have served our country in the military, many as engineers fighting the Cold War. The many contributions are the legacy to this new digital age, space age, environmental age and beyond.

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FARMINGDALE STATE COLLEGE SECURITY SYSTEMS AND LAW ENFORCEMENT TECHNOLOGY ASSISTANT PROFESSOR

JOB DESCRIPTION:

The Department of Security Systems and Law Enforcement Technology at Farmingdale State College (SUNY) invites applications for a tenure-track position at the rank of Assistant Professor beginning in the Fall of 2019. The successful candidate will teach a variety of undergraduate courses in Computer Security, including computer security, cryptography, cyber security, computer forensics, physical security, and database operations. Other responsibilities include student advisement and curriculum development. Candidates must engage in grant development work and research leading to publications in refereed academic journals. All faculty members at Farmingdale State College have three workload components: teaching, research and scholarly activity, and service. The successful candidate will demonstrate an interest and high level of competence in teaching. Candidates should have a research agenda that complements their area of academic specialty resulting in peer-reviewed publications and presentation, both of which are necessary for promotion and tenure at Farmingdale State College. The service component of the workload includes student advisement as well as active participation on departmental, school and college-wide committees. The faculty member may be expected to teach in multiple formats including hybrid, online and traditional face-to-face classes.

REQUIRED QUALIFICATIONS:

An earned doctorate in Computer Science, Computer Security, Cybersecurity, or a closely related field. Highly qualified ABD's may be considered if completion of the Ph.D. will occur by the Spring 2019 semester.

PREFERRED QUALIFICATIONS:

The candidate should have earned a Bachelor's degree in Computer Security, Computer Science, or a closely related field. He/she should possess expertise or interest in the areas of Computer Security, Cyber Security, Homeland Security, and/or Physical Security. Applicant must possess excellent communication,

interpersonal skills & have previous college level teaching experience. Evidence of prior teaching experience and scholarly publications is preferred.

ADDITIONAL INFORMATION:

This is a full-time, 10 month faculty position. For the first 10 working days, beginning Wednesday, August 29, 2018 and ending Tuesday, September 11, 2018, applications will be limited to UUP Farmingdale. CLOSING DATE FOR RECEIPT OF APPLICATIONS: Sunday, February 17, 2019, or until position is filled POSITION AVAILABLE: September 1, 2019 Salary: \$75,000, may increase commensurate with experience The State University of New York offers excellent fringe benefits including health insurance options and retirement plans. VISA SPONSORSHIP IS NOT AVAILABLE FOR THIS POSITION.'

APPLICATION INSTRUCTIONS:

To apply, submit a letter of application (that includes a statement of teaching philosophy and methodology), c.v., and names and contact information for three references. Candidates selected for interviews may be asked to provide copies of teaching evaluations and graduate transcripts (showing highest degree awarded/or currently in process). Only applications made through Farmingdale's electronic application system will be accepted. Candidates invited for interviews will be asked to make a presentation on their research as well as a separate teaching demonstration.

TO APPLY GO TO:

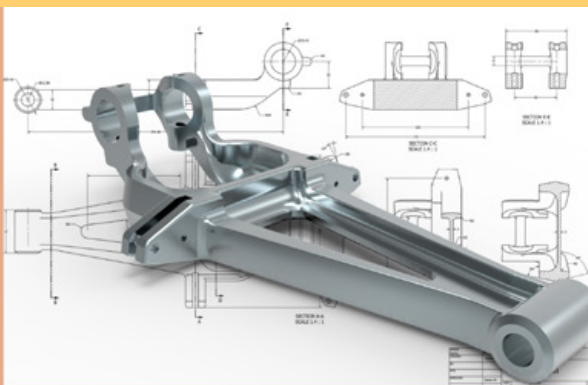
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