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Stefan Ritt and Martin Grossmann in the "Virtual Conference Control Room" at PSI, Switzerland

CONFERENCES Real Time

Keal TIME ANIMMA 2020

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ARTICLE

Online LTP Seminar

"Good morning, good afternoon and good evening"

While this newsletter is going to press, the 22nd IEEE NPSS Real Time Conference is running for the first time as a completely virtual event. We report about the experience of the first days of the virtual conference:

CONFERENCE CONCEPT

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A normal Real Time Conference runs with a full program on each of five days. We found that eight hours of video meeting is too long to keep the participants' attention. So we decided to run with two-hour plenary sessions and one-hour poster sessions per day over 10 days. In this way we were able to accommodate about the same number of contributions as we would have in a normal conference. In order to address the problem of time zones, we rotated the scheme during the conference: some days were (regarding time) bad for Asia, some days bad for Europe, some days bad for America. All plenary talks were recorded and made available to the participants on the conference website for offline viewing, allowing attendees to catch up with presentations missed because of

with Indico. A new release of this software became available shortly before the conference. It included a few improvements that had been suggested by NPSS (and others), such as restricting parts of the content to registered participants—that was good timing!

22nd Virtual IEEE-NPSS Real Time Conference

For video conferencing software we chose Zoom. The plenary sessions were run in Webinar mode: only predefined "panelists" are allowed to talk, share their screen and show their video; the other "participants" can just watch and listen. To allow questions after the presentations we used Slido: where everyone is able to type questions into a web browser or the dedicated app and the presenter answers the questions after the talk. One feature of Slido is that questions can be rated by all participants —in this way questions that are of broader interest get displayed on top of the list and are answered first.

For the poster sessions, an individual Zoom room was defined for each poster. The links to all rooms were published on the conference website, so participants could meet the presenters by clicking on the link. This gave the presenters more possibilities: they could not only show the poster, but also additional material to interested visitors. One poster presenter took people through a virtual tour of his lab. Posters could be advertised in "Micro-Orals" before the poster session: presenters were asked to upload a one-minute "pitch" video. These clips were



Martin Grossmann, CANPS Chair



Stefan Ritt General Chair, RT2020

combined into one 30-minute video that was shown

the timing.

TECHNOLOGY

The conference website, including presentation uploads and registrations/payments, was done

in the plenary before the poster session.

The Industrial Exhibit was run in the same way: each vendor got an individual Zoom room (with the possibility of breakout rooms in case several visitors arrived at the same time), running live

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NPSS NEWS

Conferences

Continued from PAGE 1

equipment from the vendor lab. Visitors could make appointments with the vendors, and since the rooms will be available until the end of the month, they could also meet after the conference. There was even a Virtual Membership Desk from IEEE that was run in the same way (thank you, Albe!).

While most presentations were available to registered participants only, a few selected talks were made available as live stream on IEEE.tv . We broadly advertised this through our mailing list and social media as outreach and publicity for NPSS activities.

We set up Slack, a messaging system, as a separate communication channel. It allowed us to define different groups of interest, like general announcements, organizing committee, participant feedback and even a coffee break channel, which was heavily used.

5:47 PM

This conference virtual organization is amazing, and you really covered all social aspects of a real conference ! Even the coffee ... congrats to all the committee ! Have a nice coffee !
3 (2)

Participant feedback on Slack

A virtual conference misses much of the social aspect of in-person meetings. To cope with this we set up rooms for participants to meet and chat over a "virtual coffee" (or any other favorite drink).

EXPERIENCE

RT2020 offered a complete program, with invited talks, oral presentations, poster presentations and short courses just as a conventional Real Time Conference does. With over 230 registrations we had more participants than ever, with participation from countries that we had never seen before at our conference, such as Brazil, Peru, India and Indonesia. The plenary sessions were typically attended by around 130 registered participants, plus around 100 free viewers on IEEE.tv

The most important feedback from running the conference is: it worked! The technology described above ran super smoothly and reliably. Audio and video quality were very good, except in a few cases which were due to local problems of the remote presenter (testing connections well before the session, when it is still possible to react, is recommended). It is important that during the event competent people take care of technically running the meeting, respond quickly to inevitable problems, and also are available to respond to requests from participants. We ran RT2020 with two persons, and they were busy all the time.

The first feedback from the participants was very positive: "this event is amazing," "everything smooth, lovely general feeling," and "excellent organization." We will evaluate the full feedback after the conference ends.

At the time of writing we haven't had a timetable rotation for time zones yet, so it is too early to draw conclusions. What we observe is that participants stayed in session even when it was very late at night for them. Maybe unusual hours are better accepted than we anticipated; a virtual conference spares you from other trouble like long flights and jetlag. After some time, people got used to the fact that attendees from many different time zones are present, so the kind of "motto" of the conference became the new greeting: "Good morning, good afternoon and good evening."

Technology is becoming limited by commercial and political conditions. We used Zoom and Dropbox, services which are restricted in some countries. We were able to find workarounds, e.g., a Dropbox-like file sharing service hosted by a European laboratory. The adapted streaming solution was accessible world-wide, including China – we had tested it and were happy to see it worked out for the conference.

One nontechnical aspect is that participants prepare for virtual conferences more last-minute. If you go to an in-person event you have to organize your travel and, as a consequence, plan your contribution in advance.

ANIMMA 2021 Update



Questions and Answers Session on Day 1 are being followed from a balcony in Padova, Italy



Researchers at IHEP Trigger Lab in Beijing, China, follow the life stream on IEEE.tv



For the virtual conference, much activity such as registration, uploading files, creating the rooms for the poster session etc. happened the last two days before, and even during, the conference. We were able to cope with that, but for a larger event more restrictive deadlines will have to be set.

CONCLUSION

In conclusion we can already say that the virtualization of the Real Time Conference was a big success so far. We have more attendees from more diverse countries, very low registration costs, especially for low-income countries and still being financially sound. Q&A sessions run more smoothly (no microphone has to be passed around), and poster and industrial presenters can show much more than just a poster. It looks as if this conference can become a blueprint for future conferences should the current travel restrictions stay with us for a while.

Martin Grossmann, CANPS Chair, can be reached by E-mail at martin.grossmann@psi.ch, and Stefan Ritt, Conference General Chair and past NPSS President, can be reached at stefan.ritt@psi.ch.

If you have any questions or suggestions, please do not hesitate to contact us at conference@animma.com





Abdallah Lyoussi ANIMMA 2021 General Chair

Dear colleagues,

In light of the current worldwide sanitary situation, we would like to reassure you that ANIMMA 2021 Program and Organizing Committees are devoted to making the seventh international conference on Advancements in Nuclear Instrumentation Measurement Methods and their Applications (www.animma.com) a successful meeting place shared by all those working in nuclear instrumentation and its applications. We continue to strongly believe that cross-border exchanges between scientists, engineers and industrialists can only lead to the most developed ideas, the best solutions and the most efficient collaborations and partnerships.

Seen from today and since we are nine months ahead of the conference, we decide to maintain the ANIMMA 2021 as initially scheduled and continue monitoring the COVID-19 situation as well as guidelines by the Czech government and local relevant associations to choose the best and most suitable format for the conference (in-person, virtual or a suitable combination of both). In so doing we will get back to you rapidly with the final decision regarding the ANIMMA 2021 layout.

In the meantime you still can submit your abstract via https://indico.utef.cvut.cz/event/23/abstracts/

For live updates, please check out the conference website www.animma.com.

Kind regards,

Abdallah LYOUSSI ANIMMA2021 General and Program Committee Chair

ANIMMA Conference conference@animma.com www.animma.com

Rastislav HODAK ANIMMA2021 Organizing Committee Chair

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NUCLEAR & PLASMA SCIENCES SOCIETY NEWS

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President's Report



Ron Schrimpf IEEE NPSS President

This is my last newsletter as President of the NPSS and much has happened during my two-year term. Our Society underwent a five-year review by the IEEE, which resulted in valuable feedback. As a consequence, we have developed a strategic plan, led by NPSS Vice President Steve Meikle. We welcomed Zane Bell as the new editor of the *Transactions on Nuclear Science*, with Paul Dressendorfer continuing as NPSS Publication Chair. We have closely monitored the trend toward Open Access publishing as well as issues associated with the General Data Protection Regulation (GDPR).

Most significantly, we have confronted issues associated with the 2020 coronavirus. This resulted in our summer 2020 AdCom meeting, which was originally scheduled to be held in New Jersey, moving to an online format. Overall, the online meeting was a great success, resulting in time and money savings, while still allowing us to deal with necessary NPSS business. There were certainly challenges, including the multiple time zones in which AdCom members live (thanks to our Australian colleagues for staying up late!). We missed the personal interactions that take place at these meetings, but we were able to maintain the informal and collegial feel that is an important part of our community. The fall 2020 AdCom meeting also will be held online, with a format similar to the summer meeting. This is likely to be considered for some of our future meetings, even when travel becomes more convenient. We are excited about the possibilities that this presents, making it possible for more people to consider serving on AdCom because of the smaller time commitment associated with online meetings (no travel time).

NPSS conferences also have been working vigorously to adapt. All of our remaining 2020 conferences will be virtual, with various approaches to organizing and conducting the conferences. While necessitated by events, this also presents exciting opportunities to provide additional value to our technical community. We anticipate that there will be many more people who can participate in the conferences if they do not have to travel. There also are interesting options for things like virtual industrial exhibits and poster sessions. We look forward to experimenting to find the best ways of organizing our conferences and working with participants to learn how to add value for our members.

Many of us have been working remotely and travel opportunities have decreased. This makes it particularly important to look for opportunities to interact with others and build a sense of technical community. We hope that NPSS will be able to play an important role in helping members maintain connections to the technical community and continue to grow in their careers. This can be accomplished through our conferences (virtual and in the future, in-person), our publications (including the newsletter), and our chapter activities.

As always, I welcome your feedback.

Ronald D. Schring

Ron Schrimpf, IEEE NPSS President, can be reached by E-mail at ron.schrimpf@vanderbilt.edu

Secretary's Report



Albe Larsen IEEE NPSS Secretary and Newsletter Editor

As details from our July AdCom meeting were covered in our last Newsletter, and our November AdCom meeting won't be held until after this Newsletter goes to press, it is time to report on other things. The November AdCom meeting, to be held on November 6^{th} and 7^{th} , will be reported on in March.

First, I commend our pioneers, Martin Grossmann and Stefan Ritt for running our first virtual conference successfully. They have also provided huge help in running our virtual AdCom meeting and will continue to do so. I know they have also been available to help our other virtual conferences. With Covid-19 again surging in many places, and both vaccines and reliable treatments on an ever-more-remote horizon, it seems their expertise will continue to be a society need.

We are also reaching the end of another year, and a time when there will be changes in AdCom membership Newly elected AdCom members starting January 1, 2021 will be Robert Miyaoka, representing the Nuclear Medical and Imaging technical committee, Evgenya Simakov, completing two years of a vacated term for the Particle Accelerator technical committee, Christine Coverdale returning for a second term to represent Plasma Science and Applications, and Martin Grossmann to represent the Transnational community. We say thank you and goodbye, with our best wishes to Vesna Sossi (Nuclear Medical and Imaging Sciences), Anna Grasselino (PAST), Brendan Godfrey (PSAC), and Christian Bohm (Transnational). There will also be some changes in technical committee chairmanships which you will learn about in the March Newsletter, when we will also have biographies of our new AdCom members, so look for them and think about ways you can serve your technical community. Contact information for AdCom members is on our web site, so get in touch

either with a TC chair or with an elected AdCom member and offer to help. The more you are involved with NPSS, the greater the benefit to you!

Early in the new year it is time to submit nominations for NPSS awards, January 31st deadline for nomination submissions, and for IEEE Fellows, March 1. Also, nominations for the IEEE Maria Sklodowska-Curie Field Award, sponsored by NPSS, are due January 15th. Surely among your colleagues there are individuals worthy of nomination, or of elevation to Fellow status. For guidance on Fellow applications, Dr. Jane Lehr and her committee can help you jmlehr@unm.edu. There is also extensive guidance on the IEEE web site.

Albe Larsen, IEEE NPSS Secretary and Newsletter Editor, can be reached by E-mail at a.m.larsen@ieee.org.

Technical Committees

NUCLEAR MEDICAL AND IMAGING SCIENCES



Roger Fulton

(Royal Marsden NHS Trust, UK), Andrea Gonzalez Montoro (Stanford University, USA), Emilie Roncali (University of California Davis, USA), Hamid Sabet (Massachusetts General Hospital, USA), and Volkmar Schulz (Aachen University, Germany). Congratulations and a warm welcome also to Robert Miyaoka (University of Washington, USA) on his election to a four-year term as NMISC AdCom Representative. I would like to thank all of those who stood for election but were not successful this year, and encourage them to volunteer again in next year's election.

The NMISC Awards Committee chaired by Jae Sung Lee has completed its evaluations, and it is a pleasure to announce the following winners of NMISC Awards. This year's winner of the Bruce Hasegawa Young Investigator Medical Imaging Science Award was Yihuan Lu from Yale University, USA, for contributions to quantitative imaging physics in PET, SPECT, and X-ray tomosynthesis, including motion correction, deep-learning based image synthesis, absolute quantitation technique, image reconstruction, and objective image quality assessment. in resolution, data corrections, image reconstruction, integration with MRI and CT, time-of-flight, and novel clinical and preclinical system configurations.

Thank you to all those who nominated candidates or accepted nomination for awards. Please consider nominating your worthy colleagues for some of the many awards available in 2021. Deadlines fall at the end of January 2021. See https://ieee-npss.org/ awards/npss-awards/. I would especially encourage you to consider nominating your female colleagues. To date there has not been a female recipient of the Edward J Hoffman Medical imaging Scientist Award. On a similar note, please consider nominating your worthy female (and male) colleagues for elevation to Fellow and Senior Member Grades. It may come as a surprise to know that no women from the NMISC community have yet been elevated to Fellow. It would be wonderful to see this rectified. Nominations need not be made by Fellows, but Fellows provide the necessary recommendations. Fellow status is not required for endorsements, though. It is not always understood that Fellowship is generally not given for a body of work over a career, but for one or two specific scientific/technical achievements.

have done without her invaluable support. On behalf of NMISC I sincerely thank Emilie for her service as Secretary for the past four years, and all who volunteered to fill the vacant position. We welcome Nicolas Karakatsanis from Weill Cornell Medical College in New York as our new Secretary in 2021.

Congratulations to Vesna Sossi and Dimitris Visvikis who have been appointed as NPSS Distinguished Lecturers. If you are interested in knowing more about this program and becoming a Distinguished Lecturer, see https://ieee-npss.org/distinguishedlecturers/.

Finally, I cannot thank enough Jae Sung Lee (Past NMISC Chair), Andrew Goertzen (NMISC Vice-Chair)

NMISC Chair

At the time of writing the 2020 Boston conference is rapidly approaching, and it will, by the time you read this, have been our first experience of a virtual NSS/MIC. 2020 has been a very challenging year for all members of the organizing committee, and especially for Lorenzo Fabris as General Chair, and Georges El Fakhri and Ramsey Badawi as MIC Program Chair and Deputy Program Chair. On behalf of the NMISC community I sincerely thank the committee all for its hard work to make the conference a success despite all the challenges. In 2021, we will hold the conference in Japan for the first time, in Yokohama. At present it is uncertain whether it will also be delivered virtually. We wish the organizing committee led by Ikuo Kanno as General Chair, with Taiga Yamaya and Jae Sung Lee as MIC Co-Chairs, every success.

Five new Council members were elected this year to three-year terms commencing in January 2021. A very warm welcome to Dimitra Darambara The Medical Imaging Technical Achievement Award was awarded to Dimitris Visvikis from INSERM, France, for contributions to PET/CT imaging methodological developments dedicated to respiratory motion correction, image reconstruction, detector modeling and automated image analysis and processing for predictive modeling in oncology.

The Edward J Hoffman Medical imaging Scientist Award has been awarded to Craig Levin from Stanford University, USA, for *contributions to the science and engineering of PET, including advances* The absence of female NMISC Fellows means of course that NMISC cannot nominate a woman to serve on the Fellowship Evaluation Committee chaired by Alberto Del Guerra. Nevertheless, we have managed to nominate two excellent candidates, Michel Defrise and Chuck Melcher, to serve on this committee from 2021. I know they will do a great job and we thank them for accepting the nomination.

Emilie Roncali's term as Secretary comes to an end in December 2020, and she will leave big shoes to fill. I don't know what I and previous Chairs would and Emilie for their hard work and support this year.

Roger Fulton, Chair of the NMISC, can be reached by E-mail at roger.fulton@sydney.edu.au.

RADIATION EFFECTS NEWS

Nominations for 2021 Awards

Nominations are due January 29th, 2021 for awards that will be presented at the IEEE NSREC 2021 Conference July 19^{th} - 23^{rd} , 2021 in Ottawa, Canada

Radiation Effects Award Nominations

Nominations are currently being accepted for the 2021 IEEE Nuclear and Plasma Sciences Society (NPSS) Radiation Effects Award. The purpose of the award is to recognize individuals who have had a sustained history of outstanding and innovative technical and/or leadership contributions to the

Continued on PAGE 4

NPSS NEWS

Technical Committees Continued from PAGE 3



Janet Barth *Chair, REC*



Teresa Farris Vice Chair, Publicity, Radiation Effects

radiation effects community. The \$3000 cash award and plaque will be presented at the 2021 NSREC in Ottawa. Nomination forms are available electronically at http://ieee-npss.org/technical-committees/ radiation-effects/ and must be submitted by January 29th, 2021. Additional information can be obtained from Kyle Miller, Senior Member-at-Large, for the Radiation Effects Steering Group. Kyle can be reached at kbmiller@ball.com.

Radiation Effects Early Achievement Award Nominations

Nominations are currently being accepted for the 2021 Radiation Effects Early Achievement Award. The purpose of this award is to recognize an individual early in his or her career whose technical contributions and leadership have had a significant impact on the field of radiation effects. The \$1500 cash award and plaque will be presented at the 2021 NSREC in Ottawa. Nomination forms are available electronically at http://ieee-npss.org/ technical-committees/radiation-effects/ and must be submitted by January 29th, 2021. Additional information can be obtained from Kyle Miller, Senior Member-at-Large, for the Radiation Effects Steering Group. Kyle can be reached at kbmiller@ball.com.

Paul Phelps Continuing Education Grant Nominations

Nominations are currently being accepted for the 2021 Paul Phelps Continuing Education Grant. The purpose of the grant is to promote continuing education (attendance at the 2021 NSREC Short Course) and encourage membership in NPSS. Outstanding members of NPSS who are either Student Members, Post-Doctoral Fellows or Research Associates, or unemployed members needing assistance in changing career direction can be nominated for the award. The actual amount of the grant will be determined prior to the 2021 NSREC in Ottawa. Funds are to be used towards covering travel costs to attend the NSREC Short Course. The grant also provides complimentary short course registration.



NSREC 2021 Short Course, Ottawa, Canada

The Short Course Chair is Marta Bagatin, University of Padova, Dept. of Information Engineering. The theme of the 2021 course is Challenges and Opportunities for Radiation Hardening in Advanced Technologies.

Presentations and speakers for the four sessions are:

HARDENING TECHNIQUES FOR DIGITAL CIRCUITS Dr. Balaji Narasimham, Broadcom

HARDENING TECHNIQUES FOR ANALOG AND MIXED-SIGNAL CIRCUITS Dr. Daniel Loveless, University of Tennessee at Chattanooga

HARDENING TECHNIQUES FOR IMAGE SENSORS Dr. Vincent Goiffon, ISAE-SUPAERO, University of Toulouse

SYSTEM-LEVEL HARDENING—WHAT COULD GO WRONG, AND HOW TO MAKE IT RIGHT Kay Chesnut, Raytheon Intelligence & Space at Raytheon Technologies

NSREC 2021 Technical Program, Ottawa, Canada

The Technical Program Chair is Brian Sierawski, Vanderbilt University. He and his technical committee will select contributed papers that describe the effects of space, terrestrial, or nuclear radiation on electronic and photonic devices, circuits, sensors, materials and systems, and semiconductor processing and design techniques for producing radiation-tolerant devices and integrated circuits.

The Poster Session is chaired by Edward Wilcox from NASA Goddard. The Workshop chair is Helmut Puchner from Infineon Technologies. Session Chairs are:

Basic Mechanisms of Radiation Effects Marc Gaillardin, CEA

Dosimetry Arto Javanainen, University of Jyväskylä

2020 Phelps Award Winners

The 2020 Paul Phelps Continuing Education Grant was awarded to four student members from the radiation effects community. At the opening of the Virtual NSREC Conference (December 1, 2020), Janet Barth, Chair of the Radiation Effects Steering Group, announced the grant awards. The grants included tuition for the 2020 NSREC Short Course and a check for \$750.

The purpose of the Phelps Grant is to promote continuing education and encourage membership in the Nuclear and Plasma Sciences Society (NPSS). The criteria for judging are exceptional promise as a student, postdoc or research associate in any of the fields of NPSS, or exceptional work in those fields by currently unemployed NPSS members with an expectation that attendance at the Short Course will improve the possibility of obtaining a job in an NPSS field.

The four recipients of the 2020 Paul Phelps Continuing Education Grant were Ygor Q. Aguiar, Robert Johnson, Stefania Peracchi, George N. Tzintzarov.



2020 Phelps Grant Recipient

Ygor Q. Aguiar (GS'16-M'20) was born in Rio de Janeiro, Brazil, in 1993. He received a B.Sc. degree in Automation Engineering from the Universidade Federal do Rio Grande (FURG), Rio Grande, Brazil, in 2015, and the M.Sc. degree in Microelectronics from the Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, Brazil, in 2017. The Ph.D. degree in Electronics will be granted from the Université de Montpellier, France, later this year, in 2020. During his Ph.D. studies, he was a Marie Skłodowska-Curie Fellow in the RADSAGA Innovative Training Network. The Ph.D. thesis concerned the application of prediction methodologies to study the radiation effects in electronics and to propose the exploration of radiation hardening by design techniques. Currently, he is a Senior Fellow at the European Organization for Nuclear Research (CERN), in Geneva, Switzerland. His current activities are focused on the assessment of the radiation environments within the Large Hadron Collider (LHC) complex for the application of Radiation Hardness Assurance (RHA) methodologies. His main research topics include the analysis and modeling of radiation effects in electronics, device variability effects, hardening techniques for digital circuit design and radiation hardness assurance.

he has demonstrated, using existing datasets spanning 12 years of production across multiple manufacturers, that this reverse bias leakage current degradation has an onset curve with respect to ion linear energy transfer and reverse bias voltage that is identical for all 4H SiC Schottky diodes, independent of rated breakdown voltage, doping densities, and epitaxial depth. The efforts of his Ph.D. work are to extend this analysis to the magnitude of leakage current degradation observed in SiC devices, with the goal of providing a baseline for reliability engineers to analyse whether this degradation would push SiC power device leakage current out of tolerance during a spacecraft mission lifetime. Robert has authored or co-authored four publications and has presented at both NSREC and RADECS. This work is supported by both the NASA Early Stage Innovations program and the NASA Electronic Parts and Packaging Program.



Stefania Peracchi 2020 Phelps Grant Recipient

Stefania Peracchi is a third-year Ph.D. student at the Centre for Medical Radiation Physics (CMRP), University of Wollongong, Australia. Stefania's research field involves development of innovative 3D silicon-on-insulator (SOI) microdosimeters for radiation protection in space and aviation. Stefania received a Bachelor's degree in Engineering Physics in 2013 followed by a Master's degree in Nuclear Engineering in 2016 at Politecnico of Milan in Italy. She then has started her professional career in France at the Institute of Radiation Protection and Nuclear Safety (in the Paris region) where she has worked as an engineer-researcher for two years. She joined the research group involved in dosimetry for aircrew members' radiation protection and was a team leader of the project related to the study of a new optical system for nuclear track detectors analysis. In July 2017, Stefania came to Australia and started her Ph.D. degree, and has been awarded a full scholarship for her studies in Australia. Her major aim concerns two aspects: firstly, the optimization of the new generation of 3D SOI microdosimeters mimicking the human biological cells used for measuring the dose in complex and mixed charged-particle fields relevant to the space environment as well as in aviation. Secondly, deep-space exploration requires improvement in terms of shielding humans from radiation; thus Stefania started using 3D SOI microdosimeters to study shielding properties of innovative materials that could replace current ones, unsuitable for environments that are more hazardous, such as the lunar or Martian ones

Nomination forms are available electronically at http://ieee-npss.org/technical-committees/radiationeffects/ and must be submitted by January 29th, 2021. Additional information can be obtained from Michael Campola, Member-at-Large, for the Radiation Effects Steering Group. Michael can be reached at michael.j.campola@nasa.gov. Hardness Assurance Technologies, Modeling and Testing

Amanda Bozovich, Jet Propulsion Laboratory

Radiation Hardening by Design Li Chen, University of Saskatchewan

Radiation Effects in Devices and Integrated Circuits John Bird, Radiation Test Solutions

Photonic Devices and Integrated Circuits Scott Davis, Aerospace Corporation

Single-Event Effects: Mechanisms and Modeling Gilles Gasiot, STMicroelectronics

Single-Event Effects: Devices and Integrated Circuits Nadia Rezzak, Microchip

Space and Terrestrial Environments Alex Hands, University of Surrey



Robert Johnson is a Ph.D. student at Vanderbilt University, advised by Professor Arthur Witulski. He received this award for his contributions on radiation effects in SiC power devices. His studies so far have focused on characterizing and understanding the mechanisms behind single event burnout and ion-induced reverse bias leakage current increases in SiC Schottky diodes and MOSFETs. Most importantly,



George N. Tzintzarov 2020 Phelps Grant Recipient

George N. Tzintzarov received the Bachelor and Master of Science degrees in electrical engineering from the Georgia Institute of Technology in 2016 and 2020, where he is currently pursuing the Ph.D. degree in electrical engineering. He is advised by Dr. John D. Cressler, and his research focuses on the effects of radiation on silicon-photonic systems. Mr. Tzintzarov was awarded the NSF Graduate Research Fellowship in 2018 and has received numerous awards from the Georgia Institute of Technology, including the Love Family Foundation Award in 2016 (the highest honor Georgia Tech gives to a student).

Janet Barth, Radiation Effects Chair, can be reached by E-mail at jbarth@ieee.org, and Teresa Farris, Vice Chair, Publicity can be reached at Teresa.farris@archon-llc.com.

UPDATES FROM THE RADIATION INSTRUMENTATION STEERING COMMITTEE



Chiara Guazzoni RISC Chair

As you read this newsletter, the virtual 2020 IEEE Nuclear Science Symposium and Medical Imaging Conference in Boston is over. Special thanks to Lorenzo Fabris, the General Chair, to Sara Pozzi and Stefan Ritt, the NSS Program Chairs and all the committee. They really did an excellent job, despite the present health crisis, being able to switch – for the first time – the full conference to virtual! We all miss seeing each other in person, in front of a warm and tasty cup of coffee or sipping a glass of wine – the best way to network and give rise to new science – however, the ability of maintaining our annual appointment with our largest conference all held virtually has really been a great success!

My warmest congratulations to the recipients of our RISC awards, please consider this writing as my warmest handshake... Arianna Morozzi is the recipient of the Radiation Instrumentation Early Career Award for contributions to numerical modelling of radiation damage effects in semiconductor detectors and to the development of TCAD models of synthetic diamond and negative capacitance materials for advanced radiation sensors. Stefan Ritt is the recipient of the Emilio Gatti Radiation Instrumentation Technical Achievement Award for contributions to the development and democratization of ultra high-speed digitizers and Stanislav Pospisil is the recipient of the Glenn F. Knoll Radiation Instrumentation Outstanding Achievement Award for contributions to the development and application of pixelated radiation detectors in medical, high-energy and space science. You will read more on the awards ceremony in the next issue of the Newsletter

As already anticipated, the 2021 edition of NSS MIC will be, for the first time, in Japan in Yokohama and our hope is to have the chance to meet there in person. In 2022 the conference will move to Milano, Italy and in 2023 to Vancouver (Canada), so start thinking of your new ideas to be shared and discussed with colleagues.

I would like also to warmly welcome the new Radiation Instrumentation Steering Committee Members-At-Large who have been elected to serve for a three-year term 1 January 2021 – 31 December 2023: Cinzia Da Viá, Stefan Gundacker, Aleksandra Krzyżanowska, Patrick LeDû, Michael Lerch. I wish the newly elected members of the Committee success and thank all candidates for their willingness to serve and for permitting their names to be included on the ballot. Please consider serving next year.

In addition, I would like to remind you all that end of January is the deadline for the IEEE Glenn F. Knoll Graduate Educational Grant and for the IEEE Glenn F. Knoll Post Doctoral Educational Grant. You can find all the relevant details on the dedicated webpage https://ieee-npss.org/awards/npss-awards/ together with details of all other NPSS awards.

Let me end on a personal note: this is my last update from RISC you will read in the newsletter, since my term as RISC Chair ends on December 31st, 2020. I still remember the mixture of trepidation and fear when Lorenzo Fabris, my Immediate Past Chair passed me the torch at the in-person RISC meeting in Sydney. And now it is time for me to pass the torch to John Valentine, my Vice-Chair who will be chairing RISC for the term 1 January 2021 – 31 December 2022. There are not enough words to express my deep gratitude to Lorenzo, to John, to our lovely secretary, Merry Keyser, working with them has been a joyful experience...and thanks to all the elected Members-At-Large and ex-officio RISC members over these years and to you all, members of the Radiation Instrumentation Technical Committee! Chairing RISC for these two years has been a challenge for me, it – for sure – drained time and resources, I hope I served with enthusiasm and I received back much more than I put in. I met real and effective role-models for my career and my service as Chair and I learned invaluable skills relevant both for my personal and professional life. It has been an honor to serve and I ask myself if I have been able to give to our younger colleagues all that I have received from this community at the beginning of my career.

Making and keeping our Technical Community alive depends on our participation; on each of us accepting the responsibility of continually trying to improve, of directly serving and volunteering when needed and of providing suggestions and novel proposals.

In one word, thank you!

Chiara Guazzoni (RISC Chair)

Chiara Guazzoni is with Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano and with INFN—Sezione di Milano, P.za Leonardo da Vinci, 32—20133 Milano—Italy, Phone: ++39 02 2399 6147— Fax: ++39 02 2399 3699, e-mail: Chiara. Guazzoni@mi.infn.it

Functional Committees



CHAPTERS

#ExploreBeyondBoundaries A Virtual Visit on Modern Physics

Plasma Sciences, Space Technologies, Renewable Energy, and more. Around 600 participants from all over India and some other countries registered for these virtual visit sessions.

Highlights of Expert Speakers & Tracks:

- Terahertz Radar Technology by Dr. Goutam Chattopadhyay, Senior Scientist, NASA – Jet Propulsion Laboratories.
- 2. James Webb Space Telescope by Dr. Matthew Greenhouse, Astrophysicist, NASA Goddard Space Flight Center.
- 'AstroSat': India's First Mission on Space by Dr. Arvind K. Singh, Deputy Project Director, AstroSat and Senior Scientist, ISRO, Ahmedabad, India.
- 4. [VIRTUAL VISIT] to ATLAS Experiments at LHC, CERN, Geneva by Dr. Steven Goldfarb & Dr. Clara Nellist, Researchers, ATLAS Experiment at LHC, CERN.
- 5. Wind Energy Systems at DTU (Technical University of Denmark) by Ms. Cathy Suo, Head of the Division, Wind Energy System, DTU



Paul Dressendorfer Publications Committee Chair

PUBLICATIONS

2020 Best Paper Awards for NPSS-sponsored Journals

In 2019 NPSS initiated annual Best Paper Awards to recognize and reward the most significant paper published in a given year in each of its primary journals- the Transactions on Nuclear Science (TNS), the Transactions on Plasma Science (TPS), and the Transactions on Radiation and Plasma Medical Sciences (TRPMS). The selection is based upon the quantifiable usefulness of the paper to the readership of the journal. Papers published in the Transactions in the third year prior to the year of the award are eligible for consideration. The 2020 award is, therefore, awarded to the paper published in calendar year 2017 which is judged to have the highest potential impact and interest to the technical community as determined by the number of downloads and citations calculated for the years 2017, 2018, and 2019. The editorial team also evaluates the quality, clarity of presentation, originality, significance, and contributions to the field of the top-ranked papers in making its final selection. The award is normally presented at the NPSS conference most relevant to the topical area of the selected paper.

IEEE BVM Student Branch, NPSS Students' Chapter Gujarat, India

Birla Vishvakarma Mahavidyalaya (BVM) Engineering College, an Autonomous Institute managed by Charutar Vidya Mandal was established in 1948 from donations made by the Birla Education Trust at the behest of Sardar Vallabhbhai Patel, the first Home Minister of independent India. The college was inaugurated by Lord Mountbatten, the Governor General of India on 14 June 1948, and rose to prominence under the stewardship of Prof. Junnarkar and Prof. K.M. Dholakia.

The Nuclear and Plasma Science Society Student Chapter originated in 2018 at the IEEE Student Branch - BVM Engineering College, Gujarat, India as the Professional Group on Nuclear Science within the IRE. With members from the Electrical, EC, Mechanical, CP and IT departments, it is possible to organize various technical workshops and events based on Nuclear and Plasma Physics. The events organized under IEEE BVM NPSS Chapter are: 1. National Symposium on Futuristic Technologies 2019, 2. Virtual Visit to Campus radio station, 3. Visit to BSNL, 4. Visit to Zydus Hospital, and 5. Virtual Visit on Modern Physics 2020.

IEEE BVM SB organized yet another flagship event under the *'IEEE NPSS - Nuclear & Plasma Sciences Society' known as 'Virtual Visit on Modern Physics - WMP 2020'* on the 5th, 6th, 7th, 12th and 13th September 2020. In this unprecedented time of the pandemic, it was possible to go beyond physical boundaries using modern-day technology to explore with experts from the finest Laboratories/Institutions around the world, issues in Modern Physics.

The overall theme focused on enhancing knowledge of students and academic professionals in the domains of Modern Physics such as Nuclear and 6. Plasma-based Technology for Future Particle Colliders by Dr. Ligia Diana Amorim, Postdoctoral Scholar, Lawrence Berkeley National Laboratory.

WMP Official Event Website: http://bit.ly/wmp2020

IEEE BVM SB Official Website: https://ewh.ieee.org/ sb/gujarat/bvmec/

BVM Engineering College Website: https://www. bvmengineering.ac.in/

The Birla Vishvakarma Mahavidyalaya Student Chapter can be reached by E-mail at ieeebvm@ bvmengineering.ac.in.

Additional information about the award can be found on the Awards page of the NPSS web site https:// ieee-npss.org/awards/npss-awards/.

We are pleased to announce the winners of the 2020 Best Paper Awards for TNS, TPS, and TRPMS. Details on the winners are as follows:

Continued on PAGE 6

NPSS NEWS

Functional Committees Continued from PAGE 5

IEEE Transactions on Nuclear Science 2020 Best Paper Award

The winners of the TNS 2020 Best Paper Award are P. Luciano, C.-L. Sotiropoulou, S. Gkaitatzis, M. Viti, S. Citraro, A. Retico, P. Giannetti, and M. Dell'Orso for their paper "A Hardware Implementation of a Brain Inspired Filter for Image Processing," published in the *IEEE Transactions on Nuclear Science*, vol. 64, no. 6, part 1, 2017, pp. 1374—1381. The paper discusses implementation of pattern-matching in the Associative Memory ASIC (originally developed for the Silicon Vertex Tracker for the Collider Detector at Fermilab) and FPGAs, and demonstrates the application of an ASIC developed for the high-energy physics community to medical image analysis. The award was presented at the virtual IEEE Real Time Conference (RT2020).



Pierluigi Luciano TNS 2020 Best Paper Award Recipient

Pierluigi Luciano received the Ph.D. degree in Electrical and Information Engineering from University of Cassino and Southern Lazio, Italy, in 2017. He is currently a Digital Electronic Designer at Alkeria, a company specializing in the development and production of high-performance cameras for both industrial (Industry 4.0) and scientific machine vision applications. At Alkeria, Pierluigi is part of the Research and Development team exploring and developing new features to improve the performance of the cameras using FPGA technology.



Dr. Calliope-Louisa Sotiropoulou TNS 2020 Best Paper Award Recipient

Dr. Calliope-Louisa Sotiropoulou is the Research and Development Manager of Campera Electronic Systems Srl. She received her Ph.D. in Electronics from Aristotle University of Thessaloniki in 2014 and has more than 10 years of research experience in the academic and industrial sectors. Her current research interests are radar, security, biomedical and image processing applications of advanced FPGA systems. In the past she has worked for the ATLAS experiment at CERN on the development of FPGA-based Trigger and Data Acquisition Systems for the inner detector and also focusing on alternative applications (e.g., biomedical) of the resulting high-performance systems. Dr. Sotiropoulou has more than 550 publications and has been an IEEE member since 2003.

Stamatios Gkaitatzis received the Ph.D. degree in particle physics from Aristotle University of Thessaloniki, Greece, in 2018 and is currently a postdoctoral researcher at the Virgo experiment. At Virgo, he focuses on the development of drivers used in the suspension hardware of the experiment. Previously he worked at the ATLAS experiment at CERN where he performed software simulations of components of the trigger system. He has authored or coauthored over 600 publications in the field of particle physics.



Mario Viti TNS 2020 Best Paper Award Recipient

Mario Viti received his Bachelor's degree in Computer Science from the University of Pisa in 2015 and was awarded a scholarship enabling him to participate in the work described in the paper. After graduating from Pisa, he studied at Université Pierre et Marie Curie (now Sorbonne Université) and received a Master's degree in image processing and computer. He is currently employed at GE Healthcare as a Ph.D. student and is conducting his research at the Centre de Vísion Numérique at CentraleSupélec in Paris, France.



TNS 2020 Best Paper Award Recipient

Saverio Citraro received the M.Sc. Degree in Electronic Engineering at University of Pisa, and the Ph.D. in Information Engineering at INFN (the Italian National Institute for Nuclear Physics). His thesis was on a real-time pattern matching system for the ATLAS experiment at CERN. After obtaining his Ph.D., he worked for three years at INFN as an electronic designer on the IXPE project (Small Explorer Mission of NASA). He has been employed at Kayser Italia since 2019, in the Electronic Design area. His interests include system electronic design, power distribution design, sensors acquisition, and data processing. His design, test and verification activities are performed paying attention to space-related issues such as: radiation, reliability, and cooling capability.

2005. Her main research interests are in physics applied to medical imaging (XR, CT, MRI, PET-MR), image processing and analysis, including machinelearning and deep-learning based methods. She developed and validated automated algorithms for lung nodule detection on large data samples of screening CT. She coordinated INFN-funded research projects devoted to the development of radiofrequency coils for MRI imaging at 7 tesla and innovative analysis pipelines for MRI images to identify biomarkers of pathologies. She coordinated the INFN research units of the projects supporting early autism spectrum disorder diagnosis through the support vector machine approach and of the ARIANNA project (Interdisciplinary research platform for neuroimaging analysis in Autism Spectrum Disorders). ARIANNA was devoted to the development and use of an IT platform to allow the collection of multicenter MRI data for neuroimagingbased research on Autism Spectrum Disorders (ASD). She is a member of the ENIGMA (Enhancing Neuro Imaging Genetics through Meta-Analysis)-ASD working group. She is currently the coordinator of the Artificial Intelligence in Medicine (AIM) INFN research project.



Paola Giannetti TNS 2020 Best Paper Award Recipient

Paola Giannetti was a proponent of the FTK processor for LHC experiments and was project leader of the INFN funded FTK R&D project (1999-2001). In addition, she was a proponent of three trigger upgrades at CDF (Fermilab 2002-2008) and was responsible for INFN funds. Paola was FTK deputy project leader at ATLAS and responsible for INFN funds (2008-2012). She is currently the Research Director of INFN Pisa.



Mauro Dell'Orso TNS 2020 Best Paper Award Recipient

Mauro Dell'Orso was a full professor at the Department of Physics of the University of Pisa. He and his wife, Paola Giannetti, worked together on hadron collider experiments at Fermilab (Chicago) from 1982 to 2009, and afterward at CERN, participating in the top quark and Higgs boson discoveries. saddened to report that Prof. Dell'Orso passed away in 2018.

IEEE Transactions on Plasma Science 2020 Best Paper Award



Chandrashekhar Joshi TPS 2020 Best Paper Award Recipient

The winner of the 2020 TPS Best Paper Award is Professor Chandrashekhar Joshi, of the Department of Electrical Engineering at the University of California, for his paper, "Laser-Driven Plasma Accelerators Operating in the Self-Guided, Blowout Regime" published in the IEEE *Transactions on Plasma Science*, vol. 45, no. 12, part 2, 2017, pp. 3134 -3146. This is an open access paper and is freely available to all readers at https://ieeexplore.ieee.org/ document/8115248. The award will be presented to Professor Joshi at the upcoming International Conference on Plasma Science in South Lake Tahoe, California, USA in June 2021.

Chandrashekhar Joshi is currently a Distinguished Chancellor's Professor of electrical and computer engineering with the University of California, Los Angeles (UCLA), CA, USA. He started the first research group on Plasma Acceleration at UCLA in 1982. This work has now spread worldwide; yet after almost four decades, his group continues to make breakthrough contributions to this grand challenge in engineering. He has made many fundamental contributions to our understanding of nonlinear optical effects in plasmas such as experimental demonstrations in plasmas of fourwave mixing, stimulated Raman forward instability, stimulated Compton scattering, resonant selffocusing, quasi-resonant modes, nonlinear coupling between electron and plasma waves and kinetic instabilities in optical field induced plasmas. He is best known for the establishing ultrahigh gradient acceleration of charged particles using space charge density waves in plasmas using a laser or a particle beam pulse as an experimental field. Such wakes are now being considered as accelerating structures for the next generation of particle colliders and compact light sources to make these critical instruments of scientific discovery compact and affordable. His group and colleagues have demonstrated nearly all the energy gain and accelerating gradient milestones, high efficiency electron and positron acceleration by plasma wakes, discovery of new phenomena such as ionization trapping, betatron radiation and refraction of relativistic particle beam at plasma-vacuum boundary. Professor Joshi has been honored with APS-DPP's Excellence in Plasma Physics Award (1996), Maxwell Prize (2006), IEEE's Particle Accelerator Science and Technology Award (2009) and Marie Sklodowska Curie Award and Medal (2017). He is a Fellow of the APS, IEEE and IoP and an elected member of the National Academy of Engineering (2014).



Stamatios Gkaitatzis TNS 2020 Best Paper Award Recipient



Alessandra Retico TNS 2020 Best Paper Award Recipient

Alessandra Retico is a senior researcher at the National Institute for Nuclear Physics (INFN), Pisa Division, Italy. She received the Laurea in Physics in 1999 and a Ph.D. in Physics in 2003 from University La Sapienza of Rome. Her Ph.D. work was done at CERN, Geneva, Switzerland. Subsequently, she took a research fellowship at Pisa University (Italy) and was hired as a researcher at INFN, Pisa Division in

Although they worked on data analysis, their main interest was focused on advanced technology development for trigger improvements for hadron collider experiments and medical applications. Prof. Dell'Orso, working together with Luciano Ristori, had the idea for the Associative Memory ASIC and produced the first device for the SVT project in the CDF experiment at Fermilab. The Associative Memory ASIC allowed tracking of full events in a few microseconds, and was the most powerful part of SVT technology, enabling SVT to detect b quark particle decays and allowing trigger selection of events particularly important for physics studies. CDF generated important results on B-physics using SVT. SVT experience triggered the start of a second-generation dedicated computer called FTK for the LHC experiments at CERN. Prof. Dell'Orso was co-leader of the SVT project and was leader of the European FP7 IAPP FTK research project that produced the paper receiving this award. We are

IS THAT WHY THEY ARE LEARNED? We all know the real reason universities have students is in order to educate the professors.

John Wheeler

ONLY IF I REMEMBER

If you have an apple and I have an apple and we exchange these apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas.

George Bernard Shaw

NPSS NEWS ieee.org/nps

IEEE Transactions on Radiation and Plasma Medical Sciences 2020 Best Paper Award



Paul Lecoq 2020 TRPMS Best Paper Award The winner of the 2020 TRPMS Best Paper Award is Paul Lecoq for his paper "Pushing the Limits in Time-of-Flight PET Imaging," IEEE *Transactions on Radiation and Plasma Medical Sciences*, vol. 1, no. 6, pp. 473-485, 2017. This paper is open access and available to all readers at https://ieeexplore.ieee. org/document/8049484. The award was presented at the virtual 2020 IEEE Nuclear Science Symposium and Medical Imaging Conference.

Paul Lecoq's interest in ionization radiation detectors with fast timing performance for TOFPET applications is a direct spin-off of his 30 years involvement in the development of scintillator-based detectors for High Energy physics experiments at CERN. He has been in particular responsible for the organization of the design and construction of the electromagnetic calorimeter of the CMS experiment at the CERN Large Hadron Calorimeter with 100 tons of scintillating crystals, which has played a central role in the discovery of the Higgs boson. This detector records the decay of the Higgs boson in two energetic gamma rays, and can be seen, from this point of view, as a gigantic PET scanner. As the future of high luminosity collider physics is pushing for improved timing resolutions up to the level of a few picoseconds only, P. Lecoq has oriented his R&D activities in the last 10 years on improving the timing performance of scintillator-based detectors, with a particular focus on Time-of-Flight PET scanners. He has received for this work a strong support from CERN and from the European Research Council through the ERC Advanced Grant TICAL #338953

Paul Dressendorfer, Chair of the IEEE NPSS Publications Committee, can be reached by E-mail at p.dressendorfer@ieee.org.

Liaison Reports | IEEE Smart Village Next Generation (ISUx)



Edl Schamiloglu Educational Activities Board Liaison

EDUCATIONAL ACTIVITIES BOARD (EAB) LIAISON

Here are some updates from the IEEE Educational Activities Board:

- » Lifelong Learning Ad Hoc Committees
- » Smart Grid, AI, and IoT teams have begun their work
- » EAB is Participating in Whitehouse OSTP (Office and Science and Technology Policy)
- » Initiative in STEM outreach for Quantum Computing (in partnership with IEEE Quantum Initiative)—IEEE has launched this website: https://quantum.ieee.org
- » EAB has submitted an Africa Ad Hoc New Initiatives Committee (NIC) proposal.
- » The IEEE Learning Network (ILN) is celebrating its first anniversary: https://iln.ieee.org



Dear NPSS Friends and AdCom Colleagues:

First, a very sad note that our staunch friend PES Executive Director Pat Ryan passed away recently after a heroic battle with cancer; Pat was a highly respected, trusted advisor who took CSI-ISV under wing in 2010 when we were struggling to find an IEEE home. Pat has been an outstanding advocate since our very beginning and his presence will be sorely missed.

Second, we convey a huge thanks from John Nelson, the new Chair of the ISV Management Committee for the NPSS record of outstanding support for the last decade; hopefully John will be able to express his appreciation personally for the recent generous funds for the WHEELS collaboration joint project Aravalli six villages in Gujarat, India. This accounted for our major financial bright spot in 2020 as COVID took a heavy toll on donations and the IEEE Foundation.

A few projects in the field are hurting badly, especially those running schools. Faced with a deficit in the approved budget for local support we had to trim the sails in all departments.

At the same time, however, the demand for support has kept on growing, which we encouraged, and today we have 20 new seed funding applications for which we will need a major fundraising success to generate the needed support over the next two years. The chicken and egg problem is that without funds we cannot launch new projects, but without a stable of excellent "shovel ready" projects we cannot attract the funds needed!

So now all energies are focused on advertising the projects and raising the funds, in a manner meeting all donors' interests as stakeholders. To this end we have just completed a 2020-21 Donor Opportunity Booklet, as in past years, featuring 20 filtered applications ranging from \$25K to \$200K each, for a total 'ask' of \$1.7M. This is the financial goal that we have been aspiring toward since becoming ISV supported by the IEEE Foundation in 2015, which will take major sustained fundraising both inside and outside of IEEE to achieve and maintain.



REI Cameroon: Teaching Computer Basics in New Lab Sponsored by IEEE Smart Village through PES funds

packages worth \$1M each in Africa alone. We need to help secure these packages which have rapidly moved forward.

- » The most advanced of these four has had investment bank funding for several years which ISV helped secure; they turned \$7M in business in 2019 which was five years after startup and is known Africa-wide as a leader in solar power. Nigeria with 200M people is only about 30% electrified.
- » In India the fourth partner has installed over 1MW in small village microgrids to enable businesses in the Himalayas based on trekking Eco-Tourism. A one-hour National Geographic Special called Breakthrough documents their work in these incredibly remote areas bringing electricity, internet and businesses to communities along with satelliteconnected education.

We've also had a couple of setbacks due to mismanagement or misfortune or combinations. Once engaged, however, we try to support all efforts toward sustainability as best as possible. We also keep building volunteer teams to support every initiative toward a best outcome. Foundation in India which addresses all of these; and a new player Silicon Valley Smart Village e-Club of Rotary International District 5170, which alone raised \$7M in 2019 for Global Projects that dovetail with ISV initiatives beautifully. As we speak, our first joint project proposal addresses COVID and remote-area health issues in six countries of Africa through the pilot Global Telehealth Network headed by a Rotary MD; plus ISV Electricity, Internet and Education provided by ISV entrepreneurs, has been submitted to our list of 20 proposals for joint funding. Our own Vice Chair Robin Podmore heads the new SVSV e-Club. And we are, of course, working hard to move along the collaboration with WHEELS that NPSS has already funded but is slowed significantly by COVID and personnel changes. More on that next time.

Many of our awardee companies are sustainable and reaching out into new profitable businesses in addition to electricity to produce capital to attract the venture capital needed for exponential growth to reach millions. But the target is not just to quell the worst of poverty but grow community opportunities to thrive in a world of poverty which is very much the product of historic exploitation by the developed world. This underlying condition is a barrier to long range and full success. The uprisings in many developed countries demonstrate how deeply entrenched these factors are and how difficult and important this work becomes. This work is not about charity but about making our highest ideals for humanity available to all. We are personally very proud that NPSS is a true champion for our efforts. We thank you all so very much!

Edl Schamiloglu, IEEE NPSS Educational Activities Board liaison, can be reached by E-mail at edls@ unm.edu.

NOT WHAT, BUT WHY

It isn't what people think that is important, but the reason they think what they think.

Eugène lonesco

COMEDY CENTRAL U?

Anybody who tries to make a distinction between education and entertainment doesn't knows the first thing about either.

Marshall McLuhan

The main payoff is that the companies we help launch will raise many times that seed amount every year to empower millions of people through their new ventures in the poorest areas of the globe through electrification, education and local entrepreneurism.

The growth is entirely up to those indigenous entrepreneurs who each have to raise much more capital than we can possibly provide as seed with a max of \$200K for an electricity pilot.

So how are we doing?

» Four of the entrepreneurs we support are growing strongly in numbers and sizes of Microgrids for homes and businesses.

» Three in Africa have recently won similar major awards of government-backed development All of these have promise of hitting our goal for them of benefitting over a million people, the first expected in the next two years.

As companies grow, our SunBlazer Modular Generation technology is proving successful with two commercial suppliers established in Africa and others planned for India in 2021-22. This avoids the mistake of over-building a system and discovering the market is too weak to support it. Modules can be easily and quickly added or redeployed to match the need (a lesson from Standard Nuclear Instrument Modules in High Energy Physics experiments).

Taking a broader view, total success at poverty elimination by community empowerment demands strategic partnerships and we have so far three of them: Collaborations among all our ISV Entrepreneurs who are involved in a wide range of needs such as clean water, sanitation, health and agriculture; collaboration with WHEELS Global

Ray Larsen, SSIT Liaison and ISVx Past Chair and Advisor. can be reached by E-mail at larsen@ slac.stanford.edu.

I MUST REMEMBER THAT

... I like to think of anything stupid I've done as a learning experience. It makes me feel less stupid. *P. J. O'Rourke*

NO DAILY CROSSWORD

The conception of two people living together for 25 years without having a cross word suggests a lack of spirit only to be admired in sheep.

A. P. Herbert

Online LTP Seminar



Mounir Laroussi Chair, Low Temperature Plasma Seminar

Because of the pandemic caused by COVID-19 most scientific conferences, workshops, and symposia have been cancelled or postponed. The unfortunate consequence of this is that the low-temperature plasma (LTP) community, like many other research communities, is now isolated without the opportunity to meet, network, and learn what's new in the field. To remedy this situation, a bi-weekly online seminar has been initiated by IEEE Fellow, Mounir Laroussi. The first seminar lecture took place on May 12th, 2020 and was attended by more than 70 participants. This seminar series is meant to fill the gap left open by the lack of in-person scientific meetings and conferences. The seminar organizing committee has selected several outstanding speakers to participate by giving a 25-30 minute-long lecture followed by 10-15 minutes of discussion. The seminar, held on Tuesdays at 9:00 AM EST via Zoom, is free to access from anywhere in the world.

Videos of the seminar lectures are archived and can be accessed at the following link:

https://mipse.umich.edu/ltp_seminars.php



ORGANIZING COMMITTEE:

Chair: Mounir Laroussi, Old Dominion University Mark Kushner, University of Michigan Michael Keidar, George Washington University Peter Bruggeman, University of Minnessota Annemie Bogaerts, University of Antwerp Xinpei Lu, Huazhong University of Science & Technology

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Ken Ostrikov, Queensland University of Technology Yevgeny Raitses, Princeton Plasma Physics Laboratory Sander Bekeschus, INP Greifswald

For more information contact: M. Laroussi. Old Dominion University. Email: mlarouss@odu.edu

EBOOK ON COLD PLASMA

An ebook on cold plasma and its medical applications was recently published by MDPI (Basel, Switzerland). The ebook was edited by Mounir Laroussi, IEEE Fellow. It contains a collection of papers that first appeared in two special issues also edited by Mounir Laroussi. The first special issue dealt with the topic of plasma medicine and the second special issue with the topic of low temperature plasma jets. The ebook can be accessed freely at the following link: https://www. mdpi.com/books/pdfview/selection/2711



plasma

Cold Plasma Characteristics and Applications in Medicine

> Edited by Mounir Laroussi Selected articles published by MDPI

www.mdpl.com/journal/plasma

MDPI

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CONTRIBUTORS LISTED ALPHABETICALLY:

breakthroughs, accomplishments at the big laboratories and similar subjects. The various Transactions, of course. deal with formal treatment in depth of technical subjects. News articles should have an element of general interest or contribute to a general understanding of technical problems or fields of technical interest or could be assessments of important ongoing technical endeavors.

Advice on possible authors or offers of such articles are invited by the editor

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CONTRIBUTED ARTICLES

Publicity releases for forthcoming meetings, items of interest from local chapters, committee reports, announcements, awards, or other materials requiring society publicity or relevant to NPSS should be submitted to the Newsletter Editor no later than January 5, 2021 for inclusion in the March 2021 Newsletter.

News articles are actively solicited from contributing editors, particularly related to important R&D activities, significant industrial applications, early reports on technical



http://www.facebook.com/ieeenpss



