2020 IEEE Nuclear and Space Radiation Effects Conference Awards: Comments by the Chair

IT IS a long-standing tradition of the IEEE Nuclear and Space Radiation Effects Conference (NSREC) to recognize the Outstanding Conference Paper, the Outstanding Data Workshop Presentation, and the best paper presented and first-authored by an IEEE Student Member. In addition to recognizing authors for particularly high quality and relevant work, the awards process also encourages all authors to produce presentations and manuscripts of high technical quality, clarity of presentation, and significance to the community.

As in previous years, this difficult selection process began during the conference, where the Awards Committee selected the candidate papers based on the conference presentations (both oral and poster). At least five committee members judged each conference session and scored each presentation on the basis of technical quality, originality, clarity, and significance to the community. In addition, each member of the committee also evaluated all the Radiation Effects Data Workshop presentations. At the conclusion of the conference, the committee discussed the results of the scoring process during a virtual meeting. This year, eleven presentations were selected as candidates for the Outstanding Conference Paper Award. In addition, the evaluations for the Data Workshop papers were discussed and the Outstanding Data Workshop Presentation was selected. Following the conference, the manuscripts of the eleven nominated papers were reviewed and scored using the criteria mentioned above. This was a time-consuming and difficult process, requiring each committee member to thoughtfully read and compare the eleven candidate papers during late December and January. Although there were a number of strong candidates, one paper clearly stood out in terms of relative ranking and scoring, and a second paper received evaluations well above those of the remaining papers. Accordingly, it was decided to award a best paper and a meritorious paper for NSREC 2020. The Outstanding Conference Paper was first-authored and presented by a student, so it also receives the Best Student Paper Award.

On the behalf of the committee, I am pleased to announce that the 2020 NSREC Outstanding Conference Paper and Best Student Paper is: "Optical single-event transients induced in integrated silicon-photonic waveguides by two-photon absorption," by *G. N. Tzintzarov, A. Ildefonso, J. W. Teng, M. Frounchi, A. Djikeng, P. Iyengar, P. S. Goley, A. Khachatrian, J. Hales, R. Bahr, S. P. Buchner, D. McMorrow, and J. D. Cressler.*

The winner of the 2020 NSREC Meritorious Paper Award is: "Effects of bias and temperature on the dose-rate sensitivity of 65 nm CMOS transistors," by *G. Borghello, F. Faccio, G. Termo, S. Michelis, S. Costanzo, H. D. Koch, and D. M. Fleetwood.*

The winner of the 2020 Outstanding Data Workshop Presentation Award is: "Energy-dependent single-event effects in power MOSFETs from a broad-spectrum neutron beam," by *J. Pritts, S. Wender, J. George, T. Fairbanks, and J. O'Donnell.*

In addition to the two papers that received the awards, the following nine papers were selected by the Awards Committee for consideration for the Outstanding Paper Award and, when appropriate, the Outstanding Student Paper Award.

"Assessment of proton direct ionization RHA for deep submicron SRAMs used in space applications," by *A. Coronetti, R. Garcia Alia, J. Wang, M. Cecchetto, C. Cazzaniga, Y. Morilla, P. Martin-Holgado, M. van Goethem, S. Brandenburg, A. Javanainen, F. Saigné, and P. Leroux (student paper).*

"Depth dependence of threshold voltage shift in 3D flash memories exposed to X-rays," by *M. Bagatin, S. Gerardin, A. Paccagnella, and S. Beltrami.*

"Total-ionizing-dose response of highly-scaled gate-all-around Si nanowire CMOS transistors," by *M. Gorchichko, E. Zhang, P. Wang, S. Bonaldo, R. Schrimpf, R. Reed, D. Linten, J. Mitard, and D. Fleetwood (student paper).*

"A heavy-ion beam monitor based on 3D NAND flash memories," *by S. Gerardin, M. Bagatin, A. Paccagnella, S. Beltrami, A. Costantino, G. Santin, A. Pesce, V. Ferlet-Cavrois, and K. Voss.*

"Threats to resiliency of redundant systems due to destructive SEE," by *R. Ladbury, J. Zinchuk, and M. Bay.*

"Investigations on spectral photon radiation sources to perform TID experiments in micro- and nano-electronic devices," by *M. Gaillardin, D. Lambert, D. Aubert, M. Raine, C. Marcandella, G. Assaillit, G. Auriel, M. Martinez, O. Duhamel, M. Ribière, N. Rostand, T. Lagutère, P. Paillet, N. Richard, C. Delbos, D. Poujols, and S. Ritter.*

"Multi-layered solid-state neutron sensor," *W. Rice, J. Levy, D. Adams, D. Nichols, R. Harrison, M. Jordan, L. Claus, and D. Dorsey.*

"Coupled temperature and radiation effects on erbium and erbium-ytterbium doped fiber amplifiers," by *M. Aubry, C. Campanella, L. Mescia, A. Morana, J. Mekki, A. Laurent, T. Robin, E. Marin, Y. Ouerdane, A. Boukenter, and S. Girard (student paper).*

"Dark current random telegraph signal in short-wavelength infrared image sensor based on InGaAs," by *C. Virmontois, V. Goiffon, J. Belloir, A. Bardoux, L. Pistre, L. Patier, and O. Gilard.*

Awards Committee Members

Jinshun Bi, IMECAS
Jeffrey Black, Sandia National Laboratories
Cesar Boatella Polo, ESA
Federico Faccio, CERN
Ruben Garcia Alia, CERN
Jeffrey George, Los Alamos National Laboratory
Sylvain Girard, Université de Saint Etienne
Pascale Gouker, MIT Lincoln Laboratory
Dave Hansen, Space Micro
Avner Haran, Soreq NRC
Arto Javanainen, University of Jyväskylä
Ani Khachatrian, Naval Research Laboratory
Daisuke Kobayashi, ISAS/JAXA
Raymond Ladbury, NASA GSFC
Nelson Lourenco, Georgia Tech Research Institute

Balaji Narasimham, Broadcom
Philippe Paillet, CEA
Serena Rizzolo, Airbus Defence and Space S.A.S.
Leif Scheick, NASA JPL
Michael Trinczek, TRIUMF
Pete Truscott, Kallisto Consultancy Ltd.
Frederic Wrobel, Universite Montpellier II
Enxia Zhang, Vanderbilt University

On behalf of the NSREC 2020 Awards Committee, I would like to congratulate all the winning authors as well as all the authors of the nominated finalist papers. In addition, I would like to warmly thank all of the members of this year's Awards Committee for agreeing to be on the committee and for their dedication and hard work in evaluating the candidate papers. I am indebted to each committee member for providing such willing and friendly assistance during these challenging times.

MARTA BAGATIN, *Chair*
University of Padova