| Technical Program Schedule of DevIC 2021 | | | |
|---|---|---|---|
| **Day-1 (19.05.2021)-Wednesday** | | **Day-2 (20.05.2021)-Thursday** | |
| **10.30 am - 11.00 am** | **Inaugural Session**<br>**Chief Guest: Prof. (Dr.) Saikat Maitra (**Hon'ble Vice Chancellor, MAKAUT, W.B.**)**<br>**Guest of Honour: Shri Pranabesh Das (**Director of Technical Education, Govt. of West Bengal**)** | **10.00 am-11.00 am** | **Plenary Talk-IV by Dr. Daniel Tomaszewski (IEEE EDS Newsletter Editor-in-Chief), Institute of Microelectronics and Photonics Al. Warsaw, Poland** |
| **11.00 am-12.00 am** | **Plenary Talk-I by Prof. Subhankar Paul, National Institute of Technology Rourkela, Orissa, India** | **11.00 am - 12.00 am** | **Plenary Talk-V by Dr. Maria Serena Chiriacò CNR NANOTEC Institute of Nanotechnology, Lecce, Italy** |
| **12.00 am-01.00 pm** | **Plenary Talk-II by Dr. Wladek Grabinski (Senior IEEE EDS Member, MOS-AK (EU)) IEEE EDS Distinguished Lecturer** | **12.00 am-01.00 pm** | **Plenary Talk-VI by Prof. Alexander Kloes Head of research group Nanoelectronics / Device Modeling, Technische Hochschule Mittelhessen, Germany, Giessen** |
| **Common Link for Inauguration Program, Plenary Talk-I and Plenary Talk-II from 10.30am to 01.00 pm**<br>Link: **https://us02web.zoom.us/j/82185984299**<br>**Meeting ID: 821 8598 4299** | | **Common Link for Plenary Talk-IV, Plenary Talk-V and Plenary Talk-VI from 10.00am to 01.00 pm**<br>Link: **https://us02web.zoom.us/j/85837723331**<br>**Meeting ID: 858 3772 3331** | |
| **1.30 pm - 03.30pm** | **Session-1: RF/Analog performance of nano-scale devices [30,72,105,108,135,137,192]**<br>**Dr. Subir Sarkar and Dr. Trupti Ranjan Lenka**<br>**https://meet.google.com/oqs-cbso-pxk** | **1.30 pm - 03.30pm** | **Session-11: Photovoltaic & Photonics based Devices & applications [29,35,37,48,90,182,229,261]**<br>**Dr. P K Basu and Dr. Sudeb Dasgupta**<br>**https://meet.google.com/ynf-srkj-try** |
| | **Session-2: Circuit & Device Integration-I [49,146, 159,241,260,266,238]**<br>**Dr. Rajat Mohapatra and Dr. Manash Chanda**<br>**https://meet.google.com/ppq-czmt-rjv** | | **Session-12: Circuit & Device Integration-II [68,141,149, 152,168,188,213]**<br>**Dr. Shree Prakash Tiwari and Dr. J K Dass**<br>**https://meet.google.com/rrw-gdei-dbj** |
| | **Session-3 : Devices & circuits for power issues and/or industrial applications [2,4,124,130,208,259]**<br>**Dr. Swapnadip De and Dr. Bikash Sharma**<br>**https://meet.google.com/gwd-uips-fno** | | **Session-13: Nanostructures & Quantum Devices [11,12,19,33,54,79,273]**<br>**Dr. Rudra Sankar Dhar and Dr. Rupam Goswami**<br>**https://meet.google.com/ijp-nwra-hgt** |
| | **Session-4: Bio Sensor Technology [15,16,42,157,164,178,233,272]**<br>**Dr. Abhijit Mallick and Dr. D Nirmal**<br>**https://meet.google.com/agw-uwxb-nnn** | | **Session-14: Antenna and Devices for High speed communication systems [5,9,65,145,176,185,225]**<br>**Dr. Sudakshina Kundu and Dr. Sanatan Chattopadhyay**<br>**https://meet.google.com/khz-nddn-zxa** |
| | **Session-5 : Devices with new material systems [25,81,107,115,131,268,271]**<br>**Dr. Jawar Singh and Dr. Soumya Pandit**<br>**https://meet.google.com/gwy-aaja-zzk** | | **Session-15: High Speed Device/HEMT [77,173,175,199,210,243]**<br>**Dr. G N Dash and Dr. Rakesh Vaid**<br>**https://meet.google.com/jvm-uiav-uks** |
| **03.30 pm - 05.30 pm** | **Session-6 : Circuit applications of nano-scale devices [14,73,88,109,183,186,207]**<br>**Dr. Aminul Islam and Dr. Rajnish Sharma**<br>**https://meet.google.com/pgn-mrfj-ckw** | **03.30 pm - 05.30 pm** | **Session-16 :Embedded Devices & IOT Based applications [59,97,122,128,165,198,202]**<br>**Dr. J K Mondal and Dr. P. K. Tewari**<br>**https://meet.google.com/gsa-fgvj-vxs** |
| | **Session-7 : Nanoscale Device Modeling [32,39,70,95,136,206,231,270]**<br>**Dr. C K Sarkar and Dr. Mridula Gupta**<br>**https://meet.google.com/kyb-szus-shg** | | **Session-17: Emerging devices & technologies-III [91,92,93,98,102,134,155]**<br>**Dr. Manoj Saxena and Dr. Ratul Baruah**<br>**https://meet.google.com/yuo-jfbx-ybs** |
| | **Session-8:Emerging devices & technologies-I [13,40,41,43,57,103,113,181]**<br>**Dr. Ajit Kumar Panda and Dr. Debashis De**<br>**https://meet.google.com/thm-uycy-tbe** | | **Session-18: Emerging devices & technologies-IV [46,47,51,53,75,80,177]**<br>**Dr. N Mohan Kumar and Dr. Avtar Singh**<br>**https://meet.google.com/ieg-puxg-xsn** |
| | **Session-9:Emerging devices & technologies-II [71,156,163,195,205,228,234,258]**<br>**Dr. Subham Sahay and Dr. Rishu Chauhar**<br>**https://meet.google.com/rcz-iqok-bep** | | **Session-19: Design and Simulation of systems with devices ( Papers) [31,38,63,69,94,166,230]**<br>**Dr. Dalia das Nandi and Dr. Sunipa Roy**<br>**https://meet.google.com/spo-shgu-ohs** |
| | **Session-10: MEMS/ Nanostructure based devices/systems [34,58,82,84,125,129,160]**<br>**Dr. Writam Banerjee and Dr. Koushik Guha**<br>**https://meet.google.com/gdm-qdux-rwv** | | **Session-20: Recent trends in VLSI Technology [62,76,100,138,150,158,194,209]**<br>**Dr. Hafizur Rahman and Dr. Navneet Gupta**<br>**https://meet.google.com/kcb-pzys-veu** |
| **05.30 pm-6:30 pm** | **Plenary Talk-III by Prof. Paul R. Berger (IEEE EDS Distinguished Lecturer), Ohio State University, Columbus, Ohio, USA**<br>**https://us02web.zoom.us/j/81421673180**<br>**Meeting ID: 814 2167 3180** | **05.30 pm-6:30 pm** | **Valedictory Session**<br>Link: **https://us02web.zoom.us/j/85837723331**<br>**Meeting ID: 858 3772 3331** |

| Inaugural Session |
|---|
| Date: 19-05-2021 Time: 10.30 am -11.00 am<br>Session Coordinator: Dr. Sandip Nandi, General Co-Chair – DevIc 2021<br>Platform: Zoom \| Link: https://us02web.zoom.us/j/82185984299 \| Meeting ID: **821 8598 4299** |
| **Chief Guest: Prof. (Dr.) Saikat Maitra (Hon'ble Vice Chancellor, Maulana Abul Kalam Azad University of Technology, W.B.)**<br>**Guest of Honour: Shri Pranabesh Das (Director of Technical Education, Govt. Of West Bengal)**<br>**Dr. Sourabh Kumar Das (Principal, Kalyani Government Engineering College, Chief Patron – DevIC 2021)**<br>**Dr. Sukla Basu (Professor & Head of the Department of ECE, Kalyani Govt. Engg. College, Patron – DevIC 2021)**<br>**Dr. Angsuman Sarkar (Professor, Kalyani Govt. Engg. College, General Chair – DevIC 2021)** |

| Plenary Lecture Talk Session –I on "Advanced Electronic Device Technology" | | |
|---|---|---|
| Session Chair: Dr. Moumita Mukherjee (Dean R & D, Adamas University)<br>Platform: Zoom \| Link: https://us02web.zoom.us/j/82185984299 \| Meeting ID: **821 8598 4299** | | |
| **Date** | **Time** | **Plenary Talk Speaker (s)** |
| **19-May-2021** | **11:00 am – 12:00 am** | **Prof. Subhankar Paul**<br>*Professor, Department of Biotechnology and Medical Engineering, Chief Investigator, Structural Biology & Nanomedicine Laboratory, National Institute of Technology Rourkela, Orissa, India*<br>***Title of the talk:*** Graphene-Based Quantum Dot for Biomedical Applications: Current Scenario and Future Prospects |
| **19-May-2021** | **12:00 am – 1:00 pm** | **Dr. Wladek Grabinski**<br>*Senior IEEE EDS Member, MOS-AK (EU), IEEE EDS Distinguished Lecturer*<br>**Title of the talk**: Compact/SPICE Modeling from a FOSS TCAD/EDA perspective |

| Plenary Lecture Talk Session –II on "Extending CMOS Technology" | | |
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| Session Chair: Dr. Saheli Sarkhel, Netaji Subhas Engineering College, Kolkata<br>Platform: Zoom \| Link: https://us02web.zoom.us/j/81421673180 \| Meeting ID: 814 2167 3180 | | |
| **Date** | **Time** | **Plenary Talk Speaker (s)** |
| **19-May-2021** | **05:30 pm – 06:30 pm** | **Prof. Paul R. Berger, Ph.D.**<br>*IEEE Fellow; IEEE Distinguished Lecturer, IEEE EDS Board of Governors ('19-'21), VP Strategic Directions IEEE EDS ('20-'21), Founder, Nanoscale Patterning Laboratory, Director, Nanoelectronics and Optoelectronics Laboratory (NOEL), Director, Organic and Printed Flexible Electronics Laboratory (OPFEL), Department of Electrical and Computer Engineering, Department of Physics, Ohio State University*<br>***Title of the talk***: Si-based Resonant Interband Tunnel Diodes for Quantum Functional and Multi-level Circuitry (Mixed-Signal, Logic, and Low Power Embedded Memory) to Extend CMOS |

| Plenary Lecture Talk Session –III on "Advanced micro- and nanoelectronics technology" | | |
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| Session Chair: Dr. Amretashis Sengupta, University of North Bengal<br>Platform: Zoom \| Link: https://us02web.zoom.us/j/85837723331 \| **Meeting ID**: **858 3772 3331** | | |
| **Date** | **Time** | **Plenary Talk Speaker (s)** |
| **20-May-2021** | **10:00 am – 11:00 am** | **Dr. Daniel Tomaszewski**<br>*IEEE EDS Newsletter Editor-in-Chief, Łukasiewicz Research Network – Institute of Microelectronics and Photonics Al. Lotników 32/46, 02-668 Warsaw, Poland Department of Microsystem Technology ul. Gen. Leopolda Okulickiego 5E, 05-500 Piaseczno, Poland*<br>***Title of the talk***: Compact 2odelling of semiconductor devices in micro- and nanoelectronics |
| **20-May-2021** | **11:00 am – 12:00 am** | **Dr. Maria Serena Chiriacò**<br>*CNR NANOTEC Institute of Nanotechnology, via Monteroni, Lecce, 73100, Italy*<br>***Title of the talk***: Polymeric and three-dimensional biochips for biological investigations through microfluidics |
| **20-May-2021** | **12:00 am – 01:00 pm** | **Prof. Alexander Kloes**<br>*Head of research group Nanoelectronics / Device Modeling, Technische Hochschule Mittelhessen, Germany, Giessen*<br>***Title of the talk:*** THM-TFET: A Physics-Based Verilog-A Compact Model of Tunnel-FETs for DC/AC Exploration of New Circuit Concepts |

| Session 1: RF/Analog performance of nano-scale devices<br>Session Chairs: Dr. Subir Sarkar (IEEE EDS DL) Jadavpur University, Kolkata and Dr. Trupti Ranjan Lenka, National Institute of Technology (NIT) Silchar, Assam<br>Date: 19-05-2020 Time: 1:30 to 3:30pm | | |
|---|---|---|
| Paper Id | Authors | Title |
| 30 | Anju Gedam, Bibhudendra Acharya and Guru Prasad Mishra | Linearity Performance Analysis of Charge-Plasma-Based Hetero-dielectric Nanotube Tunnel FET |
| 72 | Suruchi Sharma, Rikmantra Basu and Baljit Kaur | Temperature associated reliability analysis of a Si/Ge Heterojunction Dopingless Tunnel FET considering Interface Trap Charges |
| 105 | Arvind Ganesh, Jaskeerat Singh Mayall, Kshitij Goel, Sonam Rewari and R.S. Gupta | Asymmetric Gate Stack Triple Metal Gate All Around MOSFET (AGSTMGAAFET) for Improved Analog Applications |
| 108 | Sumedha Gupta, Neeta Pandey and R S Gupta | Analog Performance of Dual- Material Double Gate Junctionless Accumulation-Mode Cylindrical Gate All Around (DMDG-JLAM-CGAA) MOSFET with High-k Gate Stack |
| 135 | Amit Saxena, R. K Sharma, Manoj Kumar and R. S Gupta | Linearity Investigation of Ultra-Low-Power Cylindrical SOI Schottky Barrier MOSFET for Biomedical and 5G/LTE Circuits Application |
| 137 | Neeraj Malik, Shobha Sharma, Anubha Goel, Sonam Rewari and R. S. Gupta | Gate – Stack Dual Metal (DM) Nanowire FET with Enhanced Analog Performance for High Frequency Applications |
| 192 | Rajesh Saha, Deepak Panda, Rupam Goswami, Brinda Bhowmick and Srimanta Baishya | Effect of Drain Engineering on DC and RF Characteristics in Ge-source SD-ZHP-TFET |
| **Session 2: Circuit & Device Integration-I**<br>**Session Chair: Dr. Rajat Mohapatra, National Institute of Technology (NIT) Durgapur, West Bengal and Dr. Manash Chanda, Meghnad Saha Inst. Of Technology, Kolkata**<br>**Date: 19-05-2020 Time: 1:30 to 3:30pm** | | |
| **Date: 19-05-2020 Time: 1:30 to 3:30pm** | | |
| Paper Id | Paper Id | Paper Id |
| 49 | Chandra Prakash Singh, Saurabh Kumar Pandey and Jawar Singh | Body Connection Assessment of MOS-Diodes for MOS-Quadrupler based RF Energy Harvesting Circuit. |
| 146 | Shreya Sahu, M M Tripathi and Ajay Kumar | Numerical Simulation of GaN-BTG MOSFET for Suppression of SCEs |
| 159 | Yeswanth Chakka and Abhishek Acharya | In memory Computing based Boolen and logical Circuit Design using 8T SRAM |
| 241 | Chandra Shaker Pittala, M. Lavanya, Y.V.Jaya Chandra Reddy, V. Vallabhuni, S. China Venkateswarlu and Rajeev Ratna Vallabhuni | Energy Efficient Decoder Circuit Using Source Biasing Technique in CNTFET Technology |
| 260 | Diksha Thakur, Kulbhushan Sharma and Rajnish Sharma | Ultra Low-Power Low-Pass Filter Design for Wearable Biomedical Applications |

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| 266 | Mohammed Abdul Raheem and Mohammed Sabir Hussain | A Low Voltage NMOS current bleeding down conversion Mixer with source degeneration in 0.18µm CMOS technology |
| 238 | Swagata Devi, Koushik Guha and Krishna Baishnab | Metaheuristic algorithms-based approach for optimal design of improvised fully differential amplifier for biomedical applications |
| **Session 3: Devices & circuits for power issues and/or industrial applications<br>Session Chairs: Dr. Swapnadip De, Meghnad Saha Int. Of Technology Kolkata and Dr. Bikash Sharma, Sikkim Manipal Inst. Of Technology, Sikkim<br>Date: 19-05-2020 Time: 1:30 to 3:30pm** | | |
| 2 | Dr. Tapas Halder | Hard and Soft Switching Geometries For Operations of the MOSFET Used For the SMPS |
| 4 | Dr. Tapas Halder | Suitability of the Static Converters For the Power Factor Correction (PFC) |
| 124 | Suman Maiti, Suvodip Som, Soumen Mondal and Pritam Gayen | Symmetrical and Asymmetrical Fault Studies of Wind-Farm Embedded Power Network |
| 130 | Shankha Pramanick, Nilanjan Konar, Souvik Dey, Suvodip Som and Pritam Gayen | Study on Power Quality Phenomena of Grid connected AC Micro-grid |
| 208 | Sarbojit Mukherjee, Shib Sankar Saha and Sumana Chowdhury | Design of Duty Ratio and Phase-Shift Control Circuits for ZV-ZCS PSFB Converter Tracking MPP of SPV Source |
| 259 | Arnab Das, Bipa Datta and Achintya Das | Design Approach for Parameter Estimators for One-parameter First-order Scalar Plant |
| **Session 4: Bio Sensor Technology<br>Session Chairs: Dr. Abhijit Mallick, University of Calcutta, Kolkata and Dr. D Nirmal, Karunya Institute of Technology and sciences(Deemed-to-be-University), Coimbatore<br>Date: 19-05-2020 Time: 1:30 to 3:30pm** | | |
| 15 | Soumya Mohanty, Sikha Mishra, Meryleen Mohapatra and Guru Prasad Mishra | Impact of Source Side Cavity on Sensitivity of Hetero Channel Double Gate MOSFET Biosensor |
| 16 | Mridul Prakash Kashyap, Harshal Gudaghe and Rishu Chaujar | Investigation of TF-FinFET based Biosensor for Early Diagnosis of protein carrying diseases |
| 42 | Namrata Mendiratta and Suman Lata Tripathi | Design of 18nm AJ DG MOSFET for Bio-Sensing Applications |
| 157 | Dipanjan Sen, Priyanka Saha and Subir Kumar Sarkar | Analysis of Dual Metal Gate Engineered SiGe/Si TFET based Biosensor: A Dielectric Modulation Approach |
| 164 | Shivangi Gupta, Anju Gedam and Guru Prasad Mishra | Design and Performance Analysis of Z-Shaped Charge Plasma TFET based label-free Biosensor |
| 178 | Gargi Jana and Manash Chanda | A Dielectric Modulated MOS transistor for Biosensing |
| 233 | Avtar Singh, Gangiregula Subbarao, Ashenafi Fekadu Shifaw and Dereje Tekilu | Study of Silicon-Based Tubular Tunnel FET for Biosensing Application |
| 272 | Priyanka Sharma, Milimmit Lepcha, Bibek Chettri, Abinash Thapa, Pronita Chettri and Bikash Sharma | First Principle Study of MoS2 adsorbed Transition Metal for Sensing Urea and Methanol |
| **Session 5: Devices with new material systems<br>Session Chairs: Dr. Jawar Singh, Indian Institute of Technology (IIT) Patna, Patna and Dr. Soumya Pandit, University of Calcutta, Kolkata<br>Date: 19-05-2020 Time: 1:30 to 3:30pm** | | |

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| 25 | Rashi Mann and Rishu Chaujar | A Comparative Investigation on Characteristics of Conventional MOSFET and Ferroelectric Thin Film Modified FET. |
| 81 | Preeti Sharma, Jaya Madan, Rahul Pandey and Rajnish Sharma | Impact of Ferroelectric Oxide Layer on Palladium Silicide Source Electrode based Double-Gate Junctionless TFET |
| 107 | Karthigeyan K A, Manikandan E, Radha S and Sreeja B S | Multiband Resonance in Symmetry Broken Planar Terahertz Metamaterial |
| 115 | Gyanendra Pratap Singh and Mukesh Kumar Roy | Simple and easy one step method for synthesizing ZnO nanorods for high frequency device application |
| 131 | Tara Prasanna Dash, Eleena Mohapatra, Biswajit Jena and Chinmay Kumar Maiti | Strained SiGe Channel TFTs For Flexible Electronics Applications |
| 268 | Suman Sarkar, Manash Chanda and Debashis De | DFT Based approach to sense SF6 decomposed gases (SO2, SOF2, SO2F2) using Ni doped WS2 monolayer |
| 271 | Indra Kumar Nepal, Chenga Tshering Bhutia, Abinash Thapa, Bibek Chettri, Sanat Kumar Das and Bikash Sharma | Analysis of electrical properties of unpolarized/polarized CNT-BNNT-CNT for varying lengths of BNNT |

| **Session 6 : Circuit applications of nano-scale devices**<br>**Session Chairs: Dr. Aminul Islam, BIT Mesra, Ranchi and Dr. Rajnish Sharma, Chitkara University, Chandigarh**<br>**Date: 19-05-2020 Time: 3:30 to 5:30pm** | | |
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| 14 | Sumukh Nitundil, Nihal Singh, Rushabha Balaji and Pankaj Arora | Design and Comparative analysis of a Two-Stage Ultra-Low-Power Subthreshold Operational Amplifier in 180nm, 90nm, and 45nm technology |
| 73 | Rahul Pal, Rakesh Kumar Singh, Jayanta Ghosh and Aloke Saha | Novel 9:1 Ternary Multiplexer on 32nm CMOS Technology |
| 88 | Umakanta Nanda, Debasish Nayak, Suraj Kumar Saw, Abdul Majeed K K and Biswajit Jena | Analysis of Static Noise Margin of 10T SRAM Using Sleepy Stack Transistor Approach |
| 109 | Pranati Ghoshal, Chanchal Dey and Sunit Kumar Sen | Design of a Modified 8-bit Semiflash Analog to Digital Converter |
| 183 | Taha Saquib, Saheli Sarkhel and Soumya Pandit | A 0.6 V 1.6nA Constant Current Reference with Improved Power Supply Sensitivity |
| 186 | Justine Lewis Silvestre | A 2.24 NEF Current-Balancing Instrumentation Amplifier Using Inverter-Based Transimpedance Stage for ECG Signal Acquisition in 180nm Technology |
| 207 | Remya Jayachandran, Dhanaraj K J and Subramaniam P C | Analysis of three and four stage OTA buffer amplifier for driving resistive load < 100 Ohm |
| **Session 7: Nanoscale Device Modeling**<br>**Session Chairs: Dr. C K Sarkar (IEEE EDS DL) Jadavpur University, Kolkata and Dr. Mridula Gupta (IEEE EDS DL) University of Delhi, Delhi**<br>**Date: 19-05-2020 Time: 3:30 to 5:30pm** | | |
| 32 | Sangita Panda, Trinath Sahu and Ajit Panda | Analysing Structural Asymmetry on the Nonmonotonic Electron Mobility of Pseudomorphic Heterojunction Field Effect Transistors |
| 39 | Narayan Sahoo, Ramchandra Swain, Ajit Kumar Sahu and Sangeeta K Palo | Multisubband Electron Mobility in Pseudomorphic Al0.3Ga0.7As/In0.15Ga0.85As Double Quantum Well |

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| | | based FET Structure |
| 70 | Vikas Patel and Kaushik Mazumdar | MODELING AND SIMULATION OF GaAs NANOWIRE TRANSISTORS |
| 95 | Mrs. Krutideepa Bhol, Dr. Biswajit Jena, Dr. Umakanta Nanda and Dr. Shubham Tayal | Work-Function modulated GAA MOSFET for Improved Electrostatic Controllability in Lower Technology Node |
| 136 | Rudra Nath Palit, Panthadeb Saha and Prasun Ghosal | Generalized Memristor Model using Simulink and its Rectification for Sinusoidal and other Periodic Signals |
| 206 | Adrija Mukherjee, Tanushree Ganguli, Manash Chanda and Angsuman Sarkar | Analysis of Junctionless Double-Gate MOSFET for Energy Efficient Digital Application |
| 231 | Manasa Jena, Ajit Panda and Gananath Dash | Impact of Ge Grading Profile on the Performance Characteristics of SiGe Heterojunction Bipolar Transistors |
| 270 | Rathin Basak, Dr. Biswajit Maiti and Prof. Dr. Abhijit Mallik | Analytical Model For Tunnel Current Through 1D Channel in Advanced nano MOSFET |
| **Session 8: Emerging devices & technologies-I**<br>**Session Chairs: Dr. Ajit Kumar Panda (IEEE EDS DL), National Institute of Science and Technology, Berhampur, Odisha and Dr. Debashis De, MAKAUT, West Bengal**<br>**Date: 19-05-2020 Time: 3:30 to 5:30pm** | | |
| 13 | Sikha Mishra and Soumya S Mohanty | Analytical Investigation Of Trenched Multi-layered Gate Silicon On Nothing MOSFET With Graded Work-function |
| 40 | Eleena Mohapatra, Tara Prasanna Dash, Sanghamitra Das, Jhansirani Jena, Jyotirmayee Nanda and Chinmay Kumar Maiti | Effects of Work Function Variation on the Electrical Performance of sub-7nm GAA FETs |
| 41 | Mainak Maiti, Mridul Jain, Chandan Kumar Pandey | Enhanced DC Performance of Junctionless Field-effect Transistor Using Dielectric Engineering |
| 43 | Mridul Jain and Chandan Kumar Pandey | Dual-Dielectric-Constant Spacer Hetero-Gate-dielectric Junctionless Field-effect Transistor for Improved DC Performances |
| 57 | Rajiv Ranjan Thakur | Influence of High-k Dielectrics on Nanowire FETs |
| 103 | Lakshya Gangwani, Ruchika Chakravarti and Rishu Chaujar | Lower Fin Modulation Analysis for a Novel 5nm Top Bottom Gated Junctionless FinFET for Improved Performance |
| 113 | Mayuresh Joshi, Arya Dutt, Sanjana Tiwari, Prakhar Nigam, Ankur Beohar and Ribu Mathew | Impact of Channel Splitting on Gate All Around Tunnel Field Effect Transistor (GAATFET) |
| 181 | Rachita Ghoshhajra, Kalyan Biswas and Angsuman Sarkar | A Review on Machine Learning Approaches for Predicting the Effect of Device Parameters on Performance of Nanoscale MOSFETs |
| **Session 9: Emerging devices & technologies-II**<br>**Session Chairs: Dr. Subham Sahay, Indian Institute of Technology (IIT) Kanpur, UP and Dr. Rishu Chauhar, Delhi Technological University, Delhi**<br>**Date: 19-05-2020 Time: 3:30 to 5:30pm** | | |
| 71 | Ankush Chattopadhyay, Mrinmoy Goswami and Dr. Chayanika Bose | Influence of High-k Oxide Thickness on Gate Stack DMG Junctionless SOI MOSFET |
| 156 | Atul Kumar Yadav and Abhishek Acharya | Investigation of III-V Tunnel FETs for Analog Circuit Design |

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| 163 | Manisha Mogili and Abhishek Aacharya | Design and Analysis of III-V Tunnel FET based Energy Efficient Digital Circuits |
| 195 | Isukapalli Vishnu Vardhan Reddy and Suman Lata Tripathi | Double Gate-Pocket-Junction-less Tunnel Field Effect Transistor |
| 205 | Jagritee Talukdar and Kavicharan Mummaneni | Impact of temperature and different types of trap charges on noise behavior of Non-uniform Body with Dual Material Source TFET (NUTFET-DMS) |
| 228 | Dhananjaya Tripathy, Prakash Kumar Rout, Debasish Nayak, Sudhanshu Mohan Biswal and Nalini Singh | The impact of oxide layer width variation on the performance parameters of FinFET |
| 234 | Avtar Singh and Viranjay Mohan Srivastava | Study of SiGe-Si Source stacked in Silicon Nano tube Tunnel FET |
| 258 | Deepjyoti Deb, Rupam Goswami, Ratul Baruah, Kavindra Kandpal and Rajesh Saha | An SOI n-p-n Double Gate TFET for Low Power Applications |
| **Session 10: MEMS/ Nanostructure based devices/systems<br>Session Chairs: Dr. Writam Banerjee, Pohang University of Science and Technology (POSTECH), Korea and Dr. Koushik Guha, National Institute of Technology (NIT) Silchar, Assam<br>Date: 19-05-2020 Time: 3:30 to 5:30pm** | | |
| 34 | Sayantika Chowdhury, Palaniandavar Venkateswaran and Divya Somvanshi | Effect of biaxial strain on the electronic structure of Nb-doped WSe2 monolayer: a theoretical study |
| 58 | Silpee Talukdar and Rudra Sankar Dhar | Nanocomposites based Solid State Electrochromic Nano-Material Membrane Device |
| 82 | Sangeeta Barua, Sikha Bandyopadhyay, Ashok Kumar Mondal and Sayan Chatterjee | Nanowire texturisation of Multi Crystalline Silicon using Silver Assisted Chemical Etching |
| 84 | Minaxi Dassi, Jaya Madan, Rahul Pandey and Rajnish Sharma | Magnesium Silicide Source Double Palladium Metal Gate TFET for Highly Sensitive Hydrogen Gas Sensor |
| 125 | Pooja Joshi and Hafizur Rahaman | Complementary Memristive Switch Based Realization of Delay and Toggle Flip-Flop |
| 129 | Ashuntosh Anand, Geetanjali Singh, Abhishek Pandey, Srikanta Pal and Sudip Kundu | L-shaped Piezoelectric energy harvester for low frequency application |
| 160 | Stacy A Lynrah and P Chinnamuthu | Impact of Au and Ag contact on the electrical parameters of MnO2 Nanowires grown by GLAD technique |

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| **Session 11: Photovoltaic & Photonics based Devices & applications<br>Session Chairs: Dr. P K Basu, University of Calcutta, Kolkata and Dr. Sudeb Dasgupta, Indian Institute of Technology (IIT) Roorkee, Uttarakhand<br>Date: 20-05-2020 Time: 1:30 to 3:30pm** | | |
| 29 | Manish Verma and Guru Prasad Mishra | Ta2O5 as Tunneling Oxide for n-type Passivated c-Si CS-TOPConSolar Cell |
| 35 | Shovasis Kumar Biswas, M. Ifaz Ahmad Isti, Mohammad Mahmudul Alam Mia, Hriteshwar Talukder and Kisalaya Chakrabarti | Numerical Analysis Of An Ultra-High Negative Dispersion Compensating Micro-Structured Optical Fiber With Air-holes Arranged In Octagonal Structure |
| 37 | Moumita Banerjee, Pampa Debnath and Arpan Deyasi | Exhibiting Dispersive Characteristics at 1330 nm for Optical Pulse Propagation through 2D Kerr Nonlinear |

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| 48 | Kholee Phimu, Khomdram Jolson Singh and Rudra Sankar Dhar | Novel SPICE Model for bifacial solar cell to increase the renewable power generation |
| 90 | Lipika Mandal, Syed Sadique Anwer Askari, Md Aref Billaha and Manoj Kumar | Band Offset Dependent Performance Analysis of SnO/Si Heterojunction Solar Cell |
| 182 | Mariya Aleksandrova | Study of Lead-Free Perovskite and Quantum Dots Core-Shell Infrared Photodetector Integrated with the Silicon Technology |
| 229 | Mursal Hamdani and Gausia Qazi | Highly Efficient and Compact Silicon based Novel Michelson Interferometer Modulator |
| 261 | Sakshi Sharma, Rahul Pandey, Jaya Madan and Rajnish Sharma | Optimization of Mixed Sn and Pb Perovskite Solar Cell in Terms of Transport Layers and Absorber Layer Thickness Variation |
| **Session 12: Circuit & Device Integration-II**<br>**Session Chairs: Dr. Shree Prakash Tiwari, Indian Institute of Technology (IIT) Jodhpur and Dr. J K Dass, KIIT University, Odisha**<br>**Date: 20-05-2020 Time: 1:30 to 3:30pm** | | |
| 68 | Ananya Ghorai and Prof. Kaushik Mazumdar | Power Optimized 10 Bit ADC IP Design in Circuit Level |
| 141 | Geetanjali Singh, Srikanta Pal and Sudip Kundu | Efficient rectifier for piezoelectric energy harvester using active diode |
| 149 | Pragati Singh, Rudra Sankar Dhar and Srimanta Baishya | Features of Snapback in Compact Memory Devices For High Performance Integrated Circuits |
| 152 | Gaurav Mangal, Aman Tyagi and Rishu Chaujar | Technology Computer Aided Design of a Novel Fully Gate Covered Channel Junctionless SOI FinFET for high performance analog applications |
| 168 | Aman Kumar Gupta and Abhishek Acharya | Exploration of 9T SRAM Cell for In Memory Computing Application |
| 188 | Jyothi Prakash Kotni, Monalisa Pandey, Santrashraya Prasad and Aminul Islam | Low Power Radiation-Hardened 12T-SRAM Bit Cell with Faster Performance for Space Applications |
| 213 | Sneha Patel and Usha Mehta | A 1.8V 5-bit Segmented Current Steering Digital-to-Analog Converter |
| **Session 13: Nanostructures & Quantum Devices**<br>**Session Chairs: Dr. Rudra Sankar Dhar, National Institute of Technology (NIT) Mizoram, Mizoram and Dr. Rupam Goswami, Tezpur University, Assam**<br>**Date: 20-05-2020 Time: 1:30 to 3:30pm** | | |
| 11 | Shwetapadma Panda, Kshirabdhee Tanaya Dora, Ajit Kumar Panda and Trinath Sahu | Study of 2D Electron Mobility in AlGaN/GaN Quantum well Structure |
| 12 | Devika Jena, Sangeeta Kumari Palo, Trinath Sahu and Ajit Kumar Panda | Oscillating Electron Mobility in DoubleV-shaped Quantum Well based Field Effect Transistor Structure |
| 19 | Rikita Das, Arpan Deyasi and Angsuman Sarkar | Computing Electromagnetic Bandgap for Parallel Nanorod Structure with Double Negative Refractive Index inside Triangular Lattice |
| 33 | Madhusudan Mishra, Nikhil Ranjan Das, Narayan Sahoo and Trinath Sahu | Effect of Well Width and Barrier Width on I–V Characteristics of Armchair Graphene Nanoribbon based |

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| | | Resonant Tunneling Diode Structure |
| 54 | Lopamudra Banerjee and Hafizur Rahaman | Computational analysis of doped (10, 0) MoS2 ANR metal junction by Schottky Barrier height modulation |
| 79 | Amretashis Sengupta | An ab-initio study of 2 dimensional metal (Cu, Ag) - 1T' ReS2 van der Waals heterostructure |
| 273 | Prasanna Karki, Bibek Chettri, Abinash Thapa, Pronita Chettri and Bikash Sharma | First Principle Study of MoS2 adsorbed Transition Metal for Sensing NH3 and CH4 |
| **Session 14: Antenna and Devices for High speed communication systems**<br>**Session Chairs: Dr. Sudakshina Kundu, MAKAUT, West Bengal and Dr. Sanatan Chattopadhyay, University of Calcutta, Kolkata**<br>**Date: 20-05-2020 Time: 1:30 to 3:30pm** | | |
| 5 | Rajarshi Dhar, Arpan Deyasi and Angsuman Sarkar | Generation of Tunable Low-noise Millimeter-wave Signal using Optical Frequency Comb through Electrical Mixing at 94 GHz |
| 9 | Debjit Dey and Sukla Basu | Swastika Shaped Broadband Dielectric Resonator Antenna for S,C,X & Ku Band |
| 65 | Surajit Bosu and Baibaswata Bhattacharjee | A Design of Frequency Encoded Dibit-based Comparator Using Reflective Semiconductor Optical Amplifier with Simulative Verification |
| 145 | Surajit Bosu and Baibaswata Bhattacharjee | All-Optical Frequency Encoded Dibit-based Half Adder using Reflective Semiconductor Optical Amplifier with Simulative Verification |
| 176 | Tarun Kumar Das and Sayan Chatterjee | Harmonic Suppression in a Folded Hairpin-Line Cross-Coupled Bandpass Filter by using Spur-Line |
| 185 | Dalia Nandi and Sandip Nandi | Variation of Rain Rate Effects for Terrestrial Communication at Frequencies above 10 GHz |
| 225 | Ritwik Mondal, Ananya Biswas, Indrajit Bhattacharya and Priya Ranjan Sinha Mahapatra | A Framework for Post Disaster Management using Device to Device Communication with Controlled Mobility and Opportunistic Routing |
| **Session 15: High Speed Device/HEMT**<br>**Session Chairs: Dr. G N Dash (IEEE EDS DL), Sambalpur University, Odisha and Dr. Rakesh Vaid, University of Jammu, Jammu**<br>**Date: 20-05-2020 Time: 1:30 to 3:30pm** | | |
| 77 | Shashank Kumar Dubey and Aminul Islam | AlGaN/GaN HEMT with Recessed T-Gate and Floating Metal for High Power Applications |
| 173 | Megha Sharma and Rishu Chaujar | The Performance Analysis of 70nm T-gate InAlN/AlN MOS-HEMT using Graded Buffer |
| 175 | Eleena Mohapatra, Tara Prasanna Dash, Sanghamitra Das and Chinmay Kumar Maiti | Stress-Engineered AlGaN/GaN High Electron Mobility Transistors Design |
| 199 | Anwar Jarndal, Ahmed Elwakil and Khalid Kamel | GaN-Based Two-Stage Colpitts Oscillator for Wireless Power Transfer |
| 210 | Gaurav Bhargava and Shubhankar Majumdar | Highly Linearized GaN HEMT Based Class E/F3 Power Amplifier |
| 243 | Nisarga Chand, Sanjit Kumar Swain, Sudhanshu Mohan Biswal, Angsuman Sarkar and Sarosij Adak | Comparative study on Analog &RF Parameter of InAlN/AlN/GaN Normally off HEMTs with and without |

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| | | AlGaN Back Barrier |

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| **Session 16: Embedded Devices & IOT Based applications**<br>**Session Chairs: Dr. J K Mondal, University of Kalyani, Kalyani and Dr. P. K. Tewari, Indian Institute of Technology (IIT) Patna, Bihar**<br>**Date: 20-05-2020 Time: 3:30 to 5:30pm** | | |
| 59 | Udayan Bhattacharyya, Debanjan Mandal, Nikita Agarwal, Sayantika Sanyal, Sohom Basak, Shnouli Mukherjee, Anisha Karmakar, Saurav Sarkar and Basumita Roychowdhury | Autonomous Remote-monitoring Low-cost Agricultural System |
| 97 | Amiya Karmakar, Kaustabh Ganguly and Partha Sarathi Banerjee | HeartHealth: An Intelligent Model for Multi-Attribute Based Heart Condition Monitoring using Fuzzy-TOPSIS Method |
| 122 | Chiradeep Ghosh, Somdeb Chanda and Himadri Shekhar Dutta | Solar Powered Home Automation System Enhanced with Internet of Things and Network Time Protocol Server |
| 128 | Indrajit Das, Shalini Singh and Ayantika Sarkar | Serial and Parallel based Intrusion Detection System using Machine Learning |
| 165 | Prabakar V V | NEURAL NETWORK BASED SOFT SENSOR FOR CRITICAL PARAMETER ESTIMATION OF GAS TURBINE ENGINE |
| 198 | Mrinmoy Sadhukhan, Sudakshina Dasgupta and Indrajit Bhattacharya | AN INTELLIGENT WEATHER PREDICTION SYSTEM BASED ON IOT |
| 202 | Indrajit Das, Ayantika Sarkar and Shalini Singh | Authencation and secure communication by Haar Cascade Classifier , Eigen Face , LBP Histogram and variable irreducible polynomial in (28 ) finite field |
| **Session 17: Emerging devices & technologies-III**<br>**Session Chairs: Dr. Manoj Saxena (IEEE EDS DL), Deen Dayal Upadhyaya College, Delhi and Dr. Ratul Baruah, Tezpur University, Asaam**<br>**Date: 20-05-2020 Time: 3:30 to 5:30pm** | | |
| 91 | Irfan Pindoo and Sanjeet K Sinha | Temperature Variation Analysis of SiGe Source based Heterojunction Tunnel FETs |
| 92 | Bijoy Goswami, Savio Sengupta, Wasim Reja, Pritam Das and Subir Sarkar | Validation of Input/Output characteristics of Symmetrical Double Source TFET device |
| 93 | Bijoy Goswami, Pritam Das, Abhishek Dey, Savio Sengupta and Subir Sarkar | Trapezoidal Channel Double Gate Tunnel FET Suitable for better Scalability, Speed and Low Power Application |
| 98 | Ankit Dixit, Dip Samajdar and Navjeet Bagga | Impact of Mole Fraction Variation on the Performance of GaAs1-xSbx FinFET |
| 102 | Pranav Tripathi and Rishu Chaujar | Simulation and Performance Analysis of novel InN-GaN-BTG-MOSFET |
| 134 | Ayush Shrivastava, Swagat Nanda, Serto Engneichung Aimol and Rudra Sankar Dhar | Parametric Analysis for Varied Gate Work function in Trigate n-channel FinFET |
| 155 | Devika Jena, Eleena Mohapatra, Farida Ashraf Ali and Tara Prasana Dash | A Simulation Study of 2-D Electron Gas in GaN HEMT for High- Speed Applications |
| **Session 18: Emerging devices & technologies-IV** | | |

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| **Session Chairs: Dr. N Mohan Kumar, GITAM University, Bengaluru and Dr. Avtar Singh, Adama Science and Technology University, Adama, Ethiopia**<br>**Date: 20-05-2020 Time: 3:30 to 5:30pm** | | |
| 46 | Rupak Kumar, Suman Lata Tripathi and Manoj Singh Adhikari | Impact of Channel Engineering on 16nm, 18nm & 20nm Doping-less DG MOSFET |
| 47 | Sanmveg Saini, Mridul Prakash Kashyap and Rishu Chaujar | Recessed Channel Carbon Nanotube Truncated Fin Finfet For High Performance ULSI Applicaitons |
| 51 | Onika Parmar, Payal Nautiyal and Alok Naugarhiya | Capacitive analysis of Strained Superjunction Vertical Single Diffused MOSFET |
| 53 | Jhansirani Jena, Sanghamitra Das, Eleena Mohapatra, Jyotirmayee Nanda and Taraprasanna Dash | Performance Analysis of FinFET based inverter at 7nm Technology Node Using TCAD Simulation |
| 75 | Annada Shankar Lenka, Prasanna Kumar Sahu and Sayan Bagchi | DC Exploration of Oxide Trap Charge Effects on Electrically Doped Nano Ribbon FET |
| 80 | Yash Pathak, Bansi Dhar Malhotra and Rishu Chaujar | TCAD Analysis and Simulation of Double Metal Negative Capacitance FET (DM NCFET) |
| 177 | Sabitabrata Bhattacharya and Suman Lata Tripathi | A Novel Junction Less Dual Gate Tunnel FET with SiGe Pocket for Low Power Applications |
| **Session 19: Design and Simulation of systems with devices**<br>**Session Chairs: Dr. Dalia das Nandi, Indian Institute of Information Technology (IIIT) Kalyani, West Bengal and Dr. Sunipa Roy, Guru Nanak Institute of Technology, Sodepur**<br>**Date: 20-05-2020 Time: 3:30 to 5:30pm** | | |
| 31 | Dilip Kumar Gayen and Tanay Chattopadhyay | Optical XOR-XNOR logic circuits using mechanical movable mirrors |
| 38 | Debarshi Datta, Partha Mitra and Himadri Sekhar Dutta | Implementation of Fractional Sample Rate Digital Down Converter for Radio Receiver Applications |
| 63 | Antaryami Panigrahi, Sanjay Sarania and Rafwd Gwra Brahma | A Low Voltage Rectifier for Piezo-Electric Energy Harvesting Designed in CMOS Technology |
| 69 | Shubhrajyoti Kundu, Mehebub Alam, Biman Kumar Saha Roy and Siddhartha Sankar Thakur | A non-iterative hybrid Dynamic State Estimation scheme utilizing PMU and SCADA measurements. |
| 94 | H Bhattacharjee, A Chakraborty, R Ganguly and Monojit Mitra | A Novel Approach to Junction Temperature Management of White PC LED in High Ambient Temperature Industrial Environment |
| 166 | Malika Jain and Ramesh Bharti | Simulation of Low Power DVCC based LNA for Wireless Receiver |
| 230 | Subhasish Banerjee, Pulak Mondal and Mourina Ghosh | Performance Analysis of Single Operational Transresistance Amplifier Based Bandpass Filter and Bandreject Filter |
| **Session 20: Recent trends in VLSI Technology**<br>**Session Chairs: Dr. Hafizur Rahman, IIEST, Shibpur, Howrah and Dr. Navneet Gupta, Birla Institute of Technology and Science, Pilani, Rajasthan**<br>**Date: 20-05-2020 Time: 3:30 to 5:30pm** | | |
| 62 | Partha Mitra, Jaydeb Bhaumik and Angsuman Sarkar | Power Supply Noise Aware Physical Design with Decoupling Capacitance Allocation in System-on-Chip |
| 76 | Saianudeep Reddy Nayini, Krishna Sai Kushal Gella, Shashank Kumar Dubey, Manisha | Robust Design of Noise Tolerant 2-Phase Non Overlapping Clock Generating Circuit |

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| | Guduri and Aminul Islam | |
| 100 | Mahalthy Sabir and Dr. M A Raheem Mohammed | SIC-TPG for path delay fault detection in BIST Application |
| 138 | Jhilam Jana, Sayan Tripathi, Ritesh Sur Chowdhury, Akash Bhattacharya and Jaydeb Bhaumik | An Area and Power Efficient VLSI Architecture for 1-D and 2-D Discrete Wavelet Transform (DWT) and Inverse Discrete Wavelet Transform (IDWT) |
| 150 | Subhrapratim Nath, Aditya Shankar, Ritankar Sarkar, Suharta Banerjee, Jamuna Kanta Sing and Subir Kumar Sarkar | Minimizing Wirelength with Bend Reduction using Gradient Descent PSO Hybrid in VLSI Global Routing |
| 158 | Subhrajit Sinha Roy, Abhishek Basu and Avik Chattopadhyay | FPGA Implementation of an Image Watermarking Scheme based on Intensity Level Matching |
| 194 | Mili Sarkar and G.S. Taki | Performance Analysis of Full Adder Circuits Using Different Static CMOS Based Threshold Logic Gate |
| 209 | Sobhit Saxena, Suman Lata Tripathi and Vikram Kumar Kamboj | Power Dissipation Estimation in SWCNT based Interconnects |