

SISPAD 2014 Program

September 9

9:00–9:10 Opening and Welcome Remarks
N. Mori (*Osaka Univ., Japan*)

Session 1: Plenary

Chairpersons: K. Sonoda (*Renesas Electronics, Japan*)
M. Stettler (*Intel, USA*)

1-1 9:10–9:55 [invited talk]

“Physics of Electronic Transport in Low-Dimensionality Materials for Future FETs”
M.V. Fischetti¹, W.G. Vandenberghe¹, B. Fu¹, S. Narayanan¹, J. Kim¹, Z.-Y. Ong¹, A. Suarez-Negreira¹,
C. Sachs¹, and S.J. Aboud² (¹*Univ. Texas Dallas, USA*, ²*Stanford Univ., USA*)

1-2 9:55–10:40 [invited talk]

“Current Status and Future Prospects of Non-Volatile Memory Modeling”
A. Benvenuti¹, A. Ghetti¹, A. Mauri¹, H. Liu², and C. Mouli²
(¹*Micron Technology, Italy*, ²*Micron Technology, USA*)

1-3 10:40–11:25 [invited talk]

“Challenge of Adopting TCAD in the Development of Power Semiconductor Devices for Automotive Applications”
K. Hamada (*Toyota Motor Corporation, Japan*)

11:25–13:00 *Lunch*

Session 2: FinFET

Chairpersons: T. Noda (*Panasonic, Japan*)
N. Goldsman (*Univ. Maryland, USA*)

2-1 13:00–13:30 [invited talk]

“Device and Process Modeling: 20 Years at Intel’s Other Fab”
M.A. Stettler (*Intel Corporation, USA*)

2-2 13:30–13:50

“Analysis of Heat Conduction Property in FinFETs Using Phonon Monte Carlo Simulation”
I.N. Adisusilo¹, K. Kukita¹, and Y. Kamakura^{1,2} (¹*Osaka Univ., Japan*, ²*JST CREST, Japan*)

2-3 13:50–14:10

“3D Multi-Subband Ensemble Monte Carlo Simulator of FinFETs and Nanowire Transistors”
C. Sampedro¹, L. Donetti¹, F. Gámiz¹, A. Godoy¹, F.J. Garcia-Ruiz¹, V.P. Georgiev², S.M. Amoroso²,
C. Riddet³, E.A. Towie³, and A. Asenov^{2,3} (¹*Univ. Granada, Spain*, ²*Univ. Glasgow, UK*, ³*Gold Standard Simulations Ltd., UK*)

2-4 14:10–14:30

“USJ Engineering Impacts on FinFETs and RDF Investigation Using Full 3D Process/Device Simulation”

E.M. Bazizi¹, A. Zaka¹, T. Herrmann¹, F. Benistant², J.H.M. Tin², J.P. Goh², L. Jiang³, M. Joshi³, H. van Meer³, and K. Koroblev³ (¹*GLOBALFOUNDRIES Inc., Germany*, ²*GLOBALFOUNDRIES Inc., Singapore*, ³*GLOBALFOUNDRIES Inc., USA*)

2-5 14:30–14:50

“Accurate Fringe Capacitance Model Considering RSD and Metal Contact for Realistic FinFETs and Circuit Performance Simulation”

K.K. Choe, T.Y. An, and S.Y. Kim (*Sungkyunkwan Univ., Korea*)

Session 3: Nonvolatile Memories I

Chairpersons: T. Kunikiyo (*Renesas Electronics, Japan*)

T. Wada (*Samsung, Japan*)

3-1 13:30–13:50

“Advanced Simulation of CBRAM Devices with the Level Set Method”

P. Dorion^{1,2}, O. Cueto¹, M. Reyboz¹, J.C. Barbé¹, A. Grigoriu³, and Y. Maday²
(¹*CEA-Leti, France*, ²*UPMC, France*, ³*Univ. Paris Diderot, France*)

3-2 13:50–14:10

“Multi-Scale Modeling of Oxygen Vacancies Assisted Charge Transport in Sub-Stoichiometric TiO_x for RRAM Applications”

O. Pirrotta¹, A. Padovani¹, L. Larcher¹, L. Zhao², B. Magyari-Köpe², and Y. Nishi²
(¹*Univ. Modena and Reggio Emilia, Italy*, ²*Stanford Univ., USA*)

3-3 14:10–14:30

“Verilog-A Compact Model for Oxide-Based Resistive Random Access Memory (RRAM)”

Z. Jiang¹, S. Yu², Y. Wu³, J.H. Engel¹, X. Guan⁴, and H.-S.P. Wong¹
(¹*Stanford Univ., USA*, ²*Arizona State Univ., USA*, ³*Oracle, USA*, ⁴*IBM, USA*)

3-4 14:30–14:50

“Development of an Electro-Thermal Resistive Switching Model Based on O-Frenkel Pairs to Study Reset and Set Mechanisms in HfO₂-based RRAM Cells”

O. Cueto, A. Payet, and T. Cabout (*CEA-Leti, France*)

14:50–15:10 *Coffee Break*

Session 4: Power Devices

Chairpersons: H. Hayashi (*Lapis Semiconductor, Japan*)

C.-K. Lin (*TSMC, Taiwan*)

4-1 15:10–15:40 [invited talk]

“Exploring the Limits of the Safe Operation Area of Power Semiconductor Devices”

C. Sandow¹, R. Baburske¹, F.-J. Niedernostheide¹, F. Pfirsch¹, and C. Töchterle²
(¹*Infineon Technologies AG, Germany*, ²*Tech. Univ. München, Germany*)

4-2 15:40–16:00

“A Novel Duality-Based Modeling Methodology for Reverse Current-Voltage Characteristics of SiC”

T. Yamamoto, T. Sawai, K. Mizutani, N. Otsuka, E. Fujii, N. Horikawa, and Y. Kanzawa
(*Panasonic Corporation, Japan*)

4-3 16:00–16:20

“Efficient and Universal Method to Design Multiple Field Limiting Rings for Power Devices”
M. Mochizuki, H. Tanaka, and H. Hayashi (*LAPIS Semiconductor Co., Ltd., Japan*)

4-4 16:20–16:40

“Effects of Carbon-Related Oxide Defects on the Reliability of 4H-SiC MOSFETs”
D. Ettiserry¹, N. Goldsman¹, A. Akturk¹, and A.J. Lelis²
(¹*Univ. Maryland, USA*, ²*U.S. Army Research Lab., USA*)

Session 5: Atomic Level Simulation

Chairpersons: T. Sugiyama (*Toyota Central R&D Lab., Japan*)
M. Rudan (*Univ. Bologna, Italy*)

5-1 15:40–16:00

“Towards Atomic Level Simulation of Electron Devices Including the Semiconductor-Oxide Interface”
S. Markov¹, C.Y. Yam¹, G.H. Chen¹, B. Aradi², G. Penazzi², and T. Frauenheim²
(¹*Univ. Hong Kong, China*, ²*Univ. Bremen, Germany*)

5-2 16:00–16:20

“Atomic Ordering Effect on SiGe Electronic Structure”
Y.-T. Tung, E. Chen, T.-M. Shen, Y. Okuno, C.-C. Wu, J. Wu, and C.H. Diaz (*TSMC, Taiwan*)

5-3 16:20–16:40

“Density-Functional-Theory-Based Study of Monolayer MoS₂ on Oxide”
A. Valsaraj¹, L.F. Register¹, S.K. Banerjee¹, and J. Chang²
(¹*Univ. Texas Austin, USA*, ²*SEMATECH, USA*)

18:00–20:00 *Reception*

September 10

Session 6: Reliability I

Chairpersons: A. Hiroki (*Kyoto Inst. Tech., Japan*)
A. Asenov (*Univ. Glasgow, UK*)

6-1 9:00–9:30 [invited talk]

“Advanced Modeling of Charge Trapping: RTN, 1/f noise, SILC, and BTI”
W. Goes, M. Waltl, Y. Wimmer, G. Rzepa, and T. Grasser (*TU Wien, Austria*)

6-2 9:30–9:50

“Physical Modeling of NBTI: From Individual Defects to Devices”
G. Rzepa¹, W. Goes¹, G. Rott², K. Rott², M. Karner³, C. Kernstock³, B. Kaczer⁴, H. Reisinger², and
T. Grasser¹ (¹*TU Wien, Austria*, ²*Infineon Technologies AG, Germany*, ³*Global TCAD Solutions GmbH, Austria*, ⁴*imec, Belgium*)

6-3 9:50–10:10

10:10–10:30 *Coffee Break*

6-4 10:30–10:50

“A Predictive Physical Model for Hot-Carrier Degradation in Ultra-Scaled MOSFETs”
S. Tyaginov^{1,2}, M. Bina¹, J. Franco³, Y. Wimmer¹, D. Osintsev¹, B. Kaczer³, and T. Grasser¹
(¹TU Wien, Austria, ²Ioffe Phys. Tech. Inst., Russia, ³imec, Belgium)

6-5 10:50–11:10

“3D Atomistic Simulations of Bulk, FDSOI and Fin FETs Sensitivity to Oxide Reliability”
L. Gerrer¹, S. Amoroso¹, R. Hussin¹, F. Adamu-Lema¹, and A. Asenov²
(¹Univ. Glasgow, UK, ²Gold Standard Simulations Ltd., UK)

6-6 11:10–11:30

“Study of AlGaN/GaN HEMT Degradation through TCAD Simulations”
H.Y. Wong¹, N. Braga¹, R.V. Mickevicius¹, F. Gao², and T. Palacios²
(¹Synopsys, Inc., USA, ²MIT, USA)

Session 7: Transport

Chairpersons: Y. Kamakura (Osaka Univ., Japan)
C. Jungemann (RWTH Aachen Univ., Germany)

7-1 9:30–9:50

“Experimental and Theoretical Investigation of the ‘Apparent’ Mobility Degradation in Bulk and UTBB-FDSOI Devices: A Focus on the Near-Spacer-Region Resistance”
D. Rideau¹, F. Monsieur¹, O. Nier^{1,2}, Y.M. Niquet³, J. Lacord⁴, V. Quenette¹, G. Mugny^{1,4}, G. Hiblot^{1,2},
G. Gouget¹, M. Quoirin¹, L. Silvestri⁵, F. Nallet⁵, C. Tavernier¹, and H. Jaouen¹ (¹STMicroelectronics,
France, ²IMEP-LAHC, France, ³SP2M, France, ⁴CEA-Leti, France, ⁵Synopsys, Inc., Switzerland)

7-2 9:50–10:10

“Monte Carlo study of Effective Mobility in Short Channel FDSOI MOSFETs”
S. Guarnay^{1,2}, F. Triozon¹, S. Martinie¹, Y.-M. Niquet³, and A. Bourrel²
(¹CEA-Leti, France, ²Univ. Paris-Sud, France, ³CEA-UJF, France)

10:10–10:30 *Coffee Break*

7-3 10:30–10:50

“Semi-Classical Ensemble Monte Carlo Simulator Using Innovative Quantum Corrections for Nano-Scale n-Channel FinFETs”
D.M. Crum, A. Valsaraj, L.F. Register, and S.K. Banerjee (Univ. Texas Austin, USA)

7-4 10:50–11:10

“The Wigner Monte Carlo Method for Accurate Semiconductor Device Simulation”
P. Ellinghaus, M. Nedjalkov, and S. Selberherr (TU Wien, Austria)

7-5 11:10–11:30

“Investigation of Quantum Transport in Nanoscaled GaN High Electron Mobility Transistors”
O. Baumgartner¹, Z. Stanojević¹, L. Filipović¹, A. Grill¹, T. Grasser¹, H. Kosina¹, and M. Karner²
(¹TU Wien, Austria, ²Global TCAD Solutions GmbH, Austria)

11:30–13:00 *Lunch*

Session 8: TCAD Application and Novel Materials

Chairpersons: T. Iizuka (*Hiroshima Univ., Japan*)
A. Akturk (*Univ. Maryland, USA*)

8-1 13:00–13:30 [invited talk]

“Nonlinear Thermoelectroelastic Simulation of III-N Devices”
M.G. Ancona (*Naval Research Lab., USA*)

8-2 13:30–13:50

“Analysis of GeSn-SiGeSn Hetero-Tunnel FETs”
S.R. Sant¹, Q.-T. Zhao², D. Buca², S. Mantl², and A. Schenk¹
(¹*ETH Zurich, Switzerland*, ²*Peter Gruenberg Inst., Germany*)

8-3 13:50–14:10

“Simulation of Light-Illuminated STM Measurements”
K. Fukuda¹, M. Nishizawa¹, T. Tada¹, L. Bolotov², K. Suzuki³, S. Sato³, H. Arimoto¹, and T. Kanayama¹
(¹*AIST, Japan*, ²*Tsukuba Univ., Japan*, ³*Fujitsu Semiconductor Ltd., Japan*)

8-4 14:10–14:30

“Organic Thin-Film Transistor Compact Model with Accurate Charge Carrier Mobility”
T.K. Maiti, T. Hayashi, L. Chen, M. Miura-Mattausch, and H.J. Mattausch (*Hiroshima Univ., Japan*)

8-5 14:30–14:50

“DC, AC and Noise Simulation of Organic Semiconductor Devices Based on the Master Equation”
C. Jungemann and C. Zimmermann (*RWTH Aachen Univ., Germany*)

Session 9: Nonvolatile Memories II

Chairpersons: K. Matsuzawa (*Toshiba, Japan*)
C. Mouli (*Micron Technology, USA*)

9-1 13:30–13:50

“Investigation of Retention Behavior for 3D Charge Trapping NAND Flash Memory by 2D Self-Consistent Simulation”
Z. Lun, S. Liu, Y. He, Y. Hou, K. Zhao, G. Du, X. Liu, and Y. Wang (*Peking Univ., China*)

9-2 13:50–14:10

“An Analysis of the Effect of Hydrogen Incorporation on Electron Traps in Silicon Nitride”
K. Sonoda, E. Tsukuda, M. Tanizawa, K. Ishikawa, and Y. Yamaguchi
(*Renesas Electronics Corporation, Japan*)

9-3 14:10–14:30

“A Unified Circuit Model for Ferroelectrics”
K. Auluck¹, E.C. Kan¹, and S.R. Rajwade² (¹*Cornell Univ., USA*, ²*Intel Corporation, USA*)

Poster Session [September 10, 15:00–17:00]

Chairperson: S. Satoh (*Fujitsu Semiconductor, Japan*)

- P1** “Extraction of Quasi-Ballistic Transport Parameters in Si Double-Gate MOSFETs Based on Monte Carlo Method,” R. Ishida¹, S. Koba¹, H. Tsuchiya^{1,2}, Y. Kamakura^{2,3}, N. Mori^{2,3}, S. Uno^{2,4}, and M. Ogawa¹ (¹*Kobe Univ., Japan*, ²*JST CREST, Japan*, ³*Osaka Univ., Japan*, ⁴*Ritsumeikan Univ., Japan*)
- P2** “Physical Modeling of Time Dependent Dielectric Breakdown (TDDB) of BEOL Oxide using Monte Carlo Particle Simulation,” S. Choi and Y.J. Park (*Seoul National Univ., Korea*)
- P3** “High-Order Solution Scheme for Transport in Low-D Devices,” F. Buscemi¹, E. Piccinini², R. Brunetti¹, and M. Rudan² (¹*Univ. Modena and Reggio Emilia, Italy*, ²*Univ. Bologna, Italy*)
- P4** “Spatial Distribution of State Densities Dominating Strain Sensitivity of Carbon Nanotubes,” M. Ohnishi, K. Suzuki, and H. Miura (*Tohoku Univ., Japan*)
- P5** “Optimization of Program and Erase Characteristics of Two Bit Flash Memory P-Channel Cell Structure Using TCAD,” H. Hayashi¹, V. Axelrad², M. Mochizuki¹, T. Hayashi¹, T. Maruyama¹, K. Suzuki¹, and Y. Nagatomo¹ (¹*LAPIS Semiconductor Co., Ltd., Japan*, ²*SEQUOIA Design Systems, USA*)
- P6** “Avalanche Breakdown of PN-Junctions - Simulation by Spherical Harmonics Expansion of the Boltzmann Transport Equation,” D. Jabs and C. Jungemann (*RWTH Aachen Univ., Germany*)
- P7** “The Role of Electron Viscosity on Plasma-Wave Instability in HEMTs,” H. Wang, W. Li, J. Zhang, Y. Wang, and Z. Yu (*Tsinghua Univ., China*)
- P8** “On the Validity of Momentum Relaxation Time in Low-Dimensional Carrier Gases,” Z. Stanojević¹, O. Baumgartner¹, M. Karner², L. Filipović¹, C. Kernstock², and H. Kosina¹ (¹*TU Wien, Austria*, ²*Global TCAD Solutions GmbH, Austria*)
- P9** “Self-Forces in 3D Finite Element Monte Carlo Simulations of a 10.7 nm Gate Length SOI FinFET,” M. Aldeguende and K. Kalna (*Swansea Univ., UK*)
- P10** “A Study of Performance Enhancement in Uniaxial Stressed Silicon Nanowire Field Effect Transistors,” H.-E. Jung, W.J. Jeong, and M. Shin (*KAIST, Korea*)
- P11** “Increasing Mobility and Spin Lifetime with Shear Strain in Thin Silicon Films,” D. Osintsev, V. Sverdlov, T. Windbacher, and S. Selberherr (*TU Wien, Austria*)
- P12** “A Three Dimensional TCAD System Focused on Power and Nano-Scaled Device Applications,” Y. Ookura, N. Kato, S. Kobayashi, T. Kuwabara, M. Harada, K. Yamaguchi, and H. Koike (*AdvanceSoft Corporation, Japan*)
- P13** “Numerical Simulation of Current Noise Caused by Potential Fluctuation in Nanowire FET with an Oxide Trap,” Y. Furubayashi, M. Ogawa, and S. Souma (*Kobe Univ., Japan*)
- P14** “A Simulation Analysis of Backside-Illuminated Multi-Collection-Gate Image Sensor Employing Monte Carlo Method,” K. Shimonomura¹, V.T.S. Dao¹, T.G. Etoh¹, and Y. Kamakura² (¹*Ritsumeikan Univ., Japan*, ²*Osaka Univ., Japan*)
- P15** “Predictive Modeling of Pattern-Dependent Etch Effects in Large-Area Fully-Integrated 3D Virtual Fabrication,” D.M. Fried, K.B. Greiner, D.B. Faken, M. Kamon, A.L. Pap, R.J. Patz, M.J. Stock, J.T. Lehto, and S.R. Breit (*Coventor, Inc., USA*)
- P16** “Optimization of Si MOS Transistors for THz Detection Using TCAD Simulation,” R. Jain^{1,2}, H. Rücker¹, and N.R. Mohapatra² (¹*IHP, Germany*, ²*IIT Gandhinagar, India*)
- P17** “Template-Based Mesh Generation for Semiconductor Devices,” F. Rudolf, J. Weinbub, K. Rupp, A. Morhammer, and S. Selberherr (*TU Wien, Austria*)

- P18** “Electromigration in Solder Bumps: A Mean-Time-to-Failure TCAD Study,” H. Ceric, W.H. Zisser, M. Rovitto, and S. Selberherr (*TU Wien, Austria*)
- P19** “Modeling and Algorithms of Device Simulation for Ultra-High Speed Devices,” H. Mutoh (*Link Research Corporation, Japan*)
- P20** “Diameter Dependence of Scattering Limited Transport Properties of Si Nanowire MOSFETs under Uniaxial Tensile Strain,” T. Tanaka and K.M. Itoh (*Keio Univ., Japan*)
- P21** “Modeling Self-Heating Effects in AlGaN/GaN Electronic Devices during Static and Dynamic Operation Mode,” A.N. Tallarico, P. Magnone, E. Sangiorgi, and C. Fiegnna (*Univ. Bologna, Italy*)
- P22** “Electro-Thermal Simulation of Silicon Carbide Power Modules,” A. Akturk, N. Goldsman, and S. Potbhare (*CoolCAD Electronics, LLC, USA*)
- P23** “Nano-meter Scaled Gate Area High-K Dielectrics with Trap-Assisted Tunneling and Random Telegraph Noise,” P.-J.J. Lin, Z.-A.A. Lee, C.-W.K. Yao, H.-J.V. Lin, and H. Watanabe (*National Chiao Tung Univ., Taiwan*)
- P24** “BTB Tunneling in InAs/Si Heterojunctions,” L. Filipović, O. Baumgartner, Z. Stanojević, and H. Kosina (*TU Wien, Austria*)
- P25** “Electromigration Induced Resistance Increase in Open TSVs,” W.H. Zisser, H. Ceric, J. Weinbub, and S. Selberherr (*TU Wien, Austria*)
- P26** “MC/DD Study of Metal Grains Induced Current Variability in a Nanoscale InGaAs FinFET,” N. Seoane¹, M. Aldegunde¹, K. Kalna¹, and A. García-Loureiro² (¹*Swansea Univ., UK*, ²*Univ. Santiago de Compostela, Spain*)
- P27** “Atomistic Simulations of Phonon- and Alloy-Scattering-Limited Mobility in SiGe nFinFETs,” H.-H. Park¹, Y. Lu¹, W. Choi¹, Y.-T. Kim², K.-H. Lee², and Y. Park² (¹*Samsung Semiconductor Inc., USA*, ²*Samsung Electronics, Korea*)
- P28** “Monte Carlo Simulation of InAlAs/InGaAs HEMTs with Various Shape of Buried Gate,” A. Endoh^{1,2}, I. Watanabe¹, A. Kasamatsu¹, and T. Mimura^{1,2} (¹*INCT, Japan*, ²*Fujitsu Laboratories Ltd., Japan*)
- P29** “Large-Scale 3D TCAD Study of the Impact of Shorts in Phase Controlled Thyristors,” M. Bellini¹ and J. Vobecký² (¹*ABB, Switzerland*, ²*ABB Semiconductors Inc., Switzerland*)
- P30** “3D Coupled Electro-Thermal FinFET Simulations Including the Fin Shape Dependence of the Thermal Conductivity,” L. Wang¹, A.R. Brown², M. Nedjalkov³, C. Alexander², B. Cheng^{1,2}, C. Millar², and A. Asenov^{1,2} (¹*Univ. Glasgow, UK*, ²*Gold Standard Simulations Ltd., UK*, ³*TU Wien, Austria*)

September 11

Session 10: Variability

Chairpersons: K. Fukuda (*AIST, Japan*)
T. Grasser (*TU Wien, Austria*)

10-1 9:00–9:30 [invited talk]

“Progress in the Simulation of Time Dependent Statistical Variability in Nano CMOS Transistors”
A. Asenov^{1,2}, S.M. Amoroso¹, and L. Gerrer¹
(¹*Univ. Glasgow, UK*, ²*Gold Standard Simulations Ltd., UK*)

10-2 9:30–9:50

“A FinFET LER V_T Variability Estimation Scheme with 300x Efficiency Improvement”
S.N. Chinta, S. Mittal, P. Debasish, and U. Ganguly (*IIT Bombay, India*)

10-3 9:50–10:10

“The Impact of Fin/Sidewall/Gate Line Edge Roughness on Trapezoidal Bulk FinFET Devices”
W.-T. Huang and Y. Li (*National Chiao Tung Univ., Taiwan*)

10:10–10:30 *Coffee Break*

10-4 10:30–10:50

“The Discrepancy Between the Uniform and Variability Aware Atomistic TCAD Simulations of Decanometer Bulk MOSFETs and FinFETs”
F. Adamu-Lema¹, S.M. Amoroso¹, X. Wang¹, B. Cheng^{1,2}, L. Shifren³, R. Aitken³, S. Sinha³, G. Yeric³, and A. Asenov^{1,2} (¹*Univ. Glasgow, UK*, ²*Gold Standard Simulations Ltd., UK*, ³*ARM Ltd., UK*)

10-5 10:50–11:10

“Simultaneous Simulation of Systematic and Stochastic Process Variations”
J. Lorenz¹, E. Bär¹, A. Burenkov¹, P. Evanschitzky¹, A. Asenov², L. Wang², X. Wang², A.R. Brown³, C. Millar³, and D. Reid³
(¹*Fraunhofer IISB, Germany*, ²*Univ. Glasgow, UK*, ³*Gold Standard Simulations Ltd., UK*)

10-6 11:10–11:30

“Variability-Aware Compact Model Strategy for 20-nm Bulk MOSFETs”
X. Wang¹, D. Reid², L. Wang¹, A. Burenkov³, C. Millar², B. Cheng^{1,2}, A. Lange⁴, J. Lorenz³, E. Bär³, and A. Asenov^{1,2} (¹*Univ. Glasgow, UK*, ²*Gold Standard Simulations Ltd., UK*, ³*Fraunhofer IISB, Germany*, ⁴*Fraunhofer IIS/EAS, Germany*)

Session 11: Spintronic Devices

Chairpersons: T. Kurusu (*Toshiba, Japan*)
D. Rideau (*STMicroelectronics*)

11-1 9:30–9:50

“Influence of Device Geometry on the Non-Volatile Magnetic Flip Flop Characteristics”
T. Windbacher, H. Mahmoudi, V. Sverdlov, and S. Selberherr (*TU Wien, Austria*)

11-2 9:50–10:10

“Extended Hückel Theory for Quantum Transport in Magnetic Tunnel Junctions”
G. Shine¹, S. Manipatruni², A. Chaudhry², K.C. Saraswat¹, D.E. Nikonorov², and I.A. Young²
(¹*Stanford Univ., USA*, ²*Intel Corporation, USA*)

10:10–10:30 *Coffee Break*

11-3 10:30–10:50

“0.5V Operation and Performance of Nonvolatile SRAM Cell Based on Pseudo-Spin-FinFET Architecture”
Y. Shuto, S. Yamamoto, and S. Sugahara (*Tokyo Inst. Tech., Japan*)

11-4 10:50–11:10

“Interplay among Bilayer PseudoSpin Field-Effect Transistor (BiSFET) Performance, BiSFET Scaling and Condensate Strength”
X. Mou, L.F. Register, and S.K. Banerjee (*Univ. Texas Austin, USA*)

11:30–13:00 *Lunch*

Session 14: Frontier of Simulation Methodology and Application

Chairpersons: S. Uno (*Ritsumeikan Univ., Japan*)
J. Lorenz (*Fraunhofer Institut IISB, Germany*)

14-1 15:10–15:40 [invited talk]

“Novel Biosensing Devices for Medical Applications: Soft Contact-Lens Sensors for Monitoring Tear Sugar”
K. Mitsuhashi (*Tokyo Medical and Dental Univ., Japan*)

14-2 15:40–16:00

“A Technique to Model the AC Response of Diffuse Layers at Electrode/Electrolyte Interfaces and to Efficiently Simulate Impedimetric Biosensor Arrays for Many Analyte Configurations”
F. Pittino and L. Selmi (*Univ. Udine, Italy*)

14-3 16:00–16:20

“Full-Scale Whole Device EMC/MD Simulation of Si Nanowire Transistor Including Source and Drain Regions by Utilizing Graphic Processing Units”
A. Suzuki¹, T. Kamioka², Y. Kamakura³, and T. Watanabe¹
(¹Waseda Univ., Japan, ²Toyota Tech. Inst., Japan, ³Osaka Univ., Japan)

14-4 16:20–16:40

“Quantum Transport in NEMO5: Algorithm Improvements and High Performance Implementation”
Y. He, T. Kubis, M. Povolotskyi, J. Fonseca, and G. Klimeck (*Purdue Univ., USA*)

14-5 16:40–17:00

“Cell-Centered Finite Volume Schemes for Semiconductor Device Simulation”
K. Rupp, M. Bina, Y. Wimmer, A. Jüngel, and T. Grasser (*TU Wien, Austria*)

17:00–17:10 Closing

N. Mori (*Osaka Univ., Japan*)

Conference Schedule

Date	Room	Morning	Afternoon 1	Afternoon 2	Evening
Tuesday Sept. 9	Fuji	9:00–11:25 Session 1: Plenary (3 Invited)	13:00–14:50 Session 2: FinFET (1 Invited + 4 Regulars)	15:10–16:40 Session 4: Power Devices (1 Invited + 3 Regulars)	18:00–20:00 Reception
	Hoei		13:30–14:50 Session 3: Nonvolatile Memories I (4 Regulars)	15:40–16:40 Session 5: Atomic Level Simulation (3 Regulars)	
Wednesday Sept. 10	Fuji	9:00–11:30 Session 6: Reliability I (1 Invited + 5 Regulars)	13:00–14:50 Session 8: TCAD Application and Novel Materials (1 Invited + 4 Regulars)		
	Hoei	9:30–11:30 Session 7: Transport (5 Regulars)	13:30–14:30 Session 9: Nonvolatile Memories II (3 Regulars)		
	Kohaku			15:00–17:00 Poster Session (30 Posters)	
Thursday Sept. 11	Fuji	9:00–11:30 Session 10: Variability (1 Invited + 5 Regulars)	13:00–14:50 Session 12: Nanowire and TFT (1 Invited + 4 Regulars)	15:10–17:10 Session 14: Frontier of Simulation Methodology and Application (1 Invited + 4 Regulars)	
	Hoei	9:30–11:10 Session 11: Spintronic Devices (4 Regulars)	13:30–14:50 Session 13: Reliability II (4 Regulars)		

[as of August 23, 2014]

Author Index

Aboud SJ	1-1
Adamu-Lema F	6-5, 10-4
Adisusilo IN	2-2
Aitken R	10-4
Akturk A	4-4, P22
Aldeguende M	P9, P26
Alexander C	P30
Amoroso S	6-5
Amoroso SM	2-3, 10-1, 10-4
An TY	2-5
Ancona MG	8-1
Aradi B	5-1
Arimoto H	8-3
Asenov A ...	2-3, 6-5, P30, 10-1, 10-4, 10-5, 10-6
Auluck K	9-3
Axelrad V	P5
Baburske R	4-1
Banerjee SK	5-3, 7-3, 11-4
Bär E	13-3, 10-5, 10-6
Barbé JC	3-1
Baumgartner O	7-5, P8, P24
Bazizi EM	2-4
Bellini M	P29
Benistant F	2-4
Benvenuti A	1-2
Bescond M	12-3
Bina M	6-4, 14-5
Bolotov L	8-3
Bournel A	7-2
Braga N	6-6
Breit SR	P15
Brown AR	P30, 10-5
Brunetti R	P3
Buca D	8-2
Burenkov A	10-5, 10-6
Buscemi F	P3
Cabout T	3-4
Carrillo-Nuñez H	12-3
Cavassilas N	12-3
Ceric H	P18, P25
Chang J	5-3
Chaudhry A	11-2
Chen E	5-2
Chen GH	5-1
Chen JY	13-1
Chen L	8-4
Cheng B	P30, 10-4, 10-6
Chinta SN	10-2
Choe KK	2-5
Choi S	P2
Choi W	P27
Colinge JP	12-1
Crum DM	7-3
Cueto O	3-1, 3-4
Dao VTS	P14
Debashis P	10-2
Diaz CH	5-2
Dib E	12-3
Donetti L	2-3
Dorion P	3-1
Du G	6-3, 9-1
Ellinghaus P	7-4
Endoh A	P28
Engel JH	3-3
Etoh TG	P14
Ettiserry D	4-4
Evanschitzky P	13-3, 10-5
Faken DB	P15
Fiegna C	P21
Filipović L	7-5, P8, P24, 13-3
Fischetti MV	1-1
Fonseca J	14-4
Franco J	6-4
Frauenheim T	5-1
Fried DM	P15
Fu B	1-1
Fujii E	4-2
Fukuda K	8-3
Furubayashi Y	P13
Gámiz F	2-3
Ganguly U	10-2
Gao F	6-6
García-Loureiro A	P26
Garcia-Ruiz FJ	2-3
Georgiev VP	2-3
Gerrer L	6-5, 10-1
Ghetti A	1-2
Godoy A	2-3
Goes W	6-1, 6-2
Goh JP	2-4
Goldsman N	4-4, P22
Gouget G	7-1
Grasser T	6-1, 6-2, 6-4, 7-5, 14-5
Greiner KB	P15

Grigoriu A	3-1	Kernstock C	6-2, P8
Grill A	7-5	Kikuchihara H	12-5
Guan X	3-3	Kim Jiseok	1-1
Guarnay S	7-2	Kim Jongseob	12-4
Hamada K	1-3	Kim SY	2-5
Harada M	P12	Kim YT	P27
Hayashi H	4-3, P5	Klimeck G	14-4
Hayashi Takahisa	P5	Koba S	P1
Hayashi Takuro	8-4	Kobayashi S	P12
He Yu	14-4	Koike H	P12
He Yuan	9-1	Korablev K	2-4
Herrmann T	2-4	Kosina H	7-5, P8, P24
Hiblot G	7-1	Kubis T	14-4
Hong KH	12-4	Kukita K	2-2
Horikawa N	4-2	Kuwabara T	P12
Hou Y	9-1	Lacord J	7-1
Hsiao C	13-1	Lange A	10-6
Huang K	13-1	Lannoo M	12-3
Huang P	6-3	Larcher L	3-2
Huang WT	10-3	Lee KH	P27, 13-2
Hussin R	6-5	Lee WK	13-1
Ishida R	P1	Lee ZAA	P23
Ishikawa K	9-2	Lehto JT	P15
Itoh KM	P20	Lelis AJ	4-4
Jabs D	P6	Li W	P7
Jain R	P16	Li Y	10-3
Jaouen H	7-1	Liang J	13-1
Jeng MC	13-1	Lin CK	13-1
Jeong WJ	P10	Lin HJV	P23
Jiang L	2-4	Lin PJJ	P23
Jiang Z	3-3	Liu H	1-2
Joshi M	2-4	Liu S	9-1
Jung HE	P10	Liu X	6-3, 9-1
Jüngel A	14-5	Lorenz J	13-3, 10-5, 10-6
Jungemann C	8-5, P6	Lu Y	P27
Kaczor B	6-2, 6-4	Lun Z	9-1
Kalna K	P9, P26	Maday Y	3-1
Kamakura Y	2-2, P1, P14, 14-3	Magnone P	P21
Kamioka T	14-3	Magyari-Köpe B	3-2
Kamon M	P15	Mahmoudi H	11-1
Kan EC	9-3	Maiti TK	8-4
Kanayama T	8-3	Manipatruni S	11-2
Kang J	6-3	Mantl S	8-2
Kanzawa Y	4-2	Markov S	5-1
Karner M	6-2, 7-5, P8	Martinie S	7-2
Kasamatsu A	P28	Maruyama T	P5
Kato N	P12	Matsuyama H	13-4
Kato T	13-4	Mattausch HJ	8-4, 12-5

Mil'nikov G	12-2
Mimura T	P28
Minixhofer R	13-3
Mitsubayashi K	14-1
Mittal S	10-2
Miura H	P4
Miura-Mattausch M	8-4, 12-5
Miyamoto H	12-5
Mizutani K	4-2
Mochizuki M	4-3, P5
Mohapatra NR	P16
Monsieur F	7-1
Morhammer A	P17
Mori N	P1, 12-2
Mou X	11-4
Mouli C	1-2
Mugny G	7-1
Mutoh H	P19
Nagatomo Y	P5
Nallet F	7-1
Narayanan S	1-1
Nedjalkov M	7-4, P30
Niedernostheide FJ	4-1
Nier O	7-1
Nikonov DE	11-2
Niquet YM	7-1, 7-2
Nishi Y	3-2
Nishizawa M	8-3
Ogawa M	P1, P13
Ohnishi M	P4
Okuno Y	5-2
Ong ZY	1-1
Oodate Y	12-5
Ookura Y	P12
Osintsev D	6-4, P11
Otsuka N	4-2
Padovani A	3-2
Palacios T	6-6
Pap AL	P15
Park HH	P27
Park MC	13-2
Park Y	P27
Park YJ	P2
Park YK	13-2
Patz RJ	P15
Payet A	3-4
Penazzi G	5-1
Pfirsch F	4-1
Piccinini E	P3
Pirrotta O	3-2
Pittino F	14-2
Potbhare S	P22
Povolotskyi M	14-4
Quenette V	7-1
Quoirin M	7-1
Rajwade SR	9-3
Register LF	5-3, 7-3, 11-4
Reid D	10-5, 10-6
Reisinger H	6-2
Reyboz M	3-1
Riddet C	2-3
Rideau D	7-1
Roger F	13-3
Rott G	6-2
Rott K	6-2
Rovitto M	P18
Rücker H	P16
Rudan M	P3
Rudolf F	P17, 13-3
Rupp K	P17, 14-5
Ryu H	12-4
Rzepa G	6-1, 6-2
Sachs C	1-1
Sampedro C	2-3
Sandow C	4-1
Sangiorgi E	P21
Sant SR	8-2
Saraswat KC	11-2
Sato S	8-3
Sawai T	4-2
Schenk A	8-2
Selberherr S	7-4, P11, P17, P18, P25, 11-1, 13-3
Selmi L	14-2
Seoane N	P26
Shen TM	5-2
Shifren L	10-4
Shimonomura K	P14
Shin M	P10
Shine G	11-2
Shuto Y	11-3
Silvestri L	7-1
Singulani A	13-3
Sinha S	10-4
Sonoda K	9-2
Souma S	P13
Stanojević Z	7-5, P8, P24
Stettler MA	2-1
Stock MJ	P15
Su KW	13-1
Suarez-Negreira A	1-1

Sugahara S	11-3	Wang X	10-4, 10-5, 10-6
Suzuki A	14-3	Wang Yan	P7
Suzuki Kaina	8-3	Wang Yi	9-1
Suzuki Kazuya	P5	Wang Yijiao	6-3
Suzuki Ken	P4	Watanabe H	P23
Sverdlov V	P11, 11-1	Watanabe I	P28
		Watanabe T	14-3
Tada T	8-3	Weinbub J	P17, P25
Tallarico AN	P21	Wimmer Y	6-1, 6-4, 14-5
Tanaka H	4-3	Windbacher T	P11, 11-1
Tanaka T	P20	Wong HSP	3-3
Tanimoto Y	12-5	Wong HY	6-6
Tanizawa M	9-2	Wu CC	5-2
Tanoue H	12-5	Wu J	5-2
Tavernier C	7-1	Wu Y	3-3
Tin JHM	2-4		
Töchterle C	4-1	Yam CY	5-1
Towie EA	2-3	Yamaguchi K	P12
Triozon F	7-2	Yamaguchi Y	9-2
Tsuchiya H	P1	Yamamoto S	11-3
Tsukuda E	9-2	Yamamoto T	4-2
Tung YT	5-2	Yang GY	13-2
Tyaginov S	6-4	Yang JS	13-2
		Yao CWK	P23
Uemura T	13-4	Yeric G	10-4
Uno S	P1	Young IA	11-2
		Yu S	3-3
Valsaraj A	5-3, 7-3	Yu Z	P7
van Meer H	2-4		
Vandenberghé WG	1-1	Zaka A	2-4
Vobecký J	P29	Zhang J	P7
		Zhao K	9-1
Waltl M	6-1	Zhao L	3-2
Wang H	P7	Zhao QT	8-2
Wang L	P30, 10-5, 10-6	Zimmermann C	8-5
		Zisser WH	P18, P25