



Website: <http://icrc.ieee.org/>

Contact: [balestra@minatec.grenoble-inp.fr](mailto:balestra@minatec.grenoble-inp.fr)

Early Registration: **February 28<sup>th</sup>, 2019**

Registration Fees in € (excl. VAT)	Early	Regular
IEEE or SINAND member	200	250
Non IEEE/SINAND member	250	300
Student	100	150
Accompanying person	90	120



### Sponsors



## General Scope

The new **International Nanodevices and Computing (INC)** conference covers the continuously evolving technology ecosystem based on nanotechnology, nanodevices and computing, supporting the global information technologies infrastructure. The INC conference includes predictions on devices for computing and communications, computer architecture, and applications.

Reports from 2017 IRDS™ and early results from 2018 IRDS™ reports will be presented. In addition, state-of-the-art experimental results on these topics will be presented by an international group of invited experts, covering Nano-devices and - materials in the fields of More Moore, More than Moore and Beyond-CMOS.

Related subjects from the European Nanoelectronics Roadmap (NEREID) and the Systems and Devices Roadmap of Japan (SDRJ) will be presented.

The latest results in the field of Neuromorphic Computing, Quantum Computing, Optical Computing and Energy Efficient Computing will be highlighted. A unique summary from reports of the upcoming Future Networks™ Beyond 5G roadmap will be presented, as well as sessions on Software and Spintronics/Magnonics.



## IEEE International Nanodevices and Computing Conference

IRDS™ « International Roadmap for Devices and Systems » 2019 Spring Conference

IEEE International Conference on Rebooting Computing

**April 3-5, 2019**

**Minatec, Grenoble, France**



## IEEE Conference on Rebooting Computing

### Session “Emerging technology for probabilistic inference” 2PM - 6PM

- ◆ Overview: Arvind Kumar IBM US, Marvin Faix – Univ. Grenoble Alpes, Pierre Bessière, CNRS
- ◆ An optical co-processor for large-scale machine learning based on random features: Laurent Daudet - Paris Diderot Univ. and CTO of LightOn company
- ◆ Generating Stochastic Bits using Tunable Quantum Systems: Enrique Blair - Baylor University
- ◆ Memory Centric Artificial Intelligence: Damien Querlioz - Univ. of Paris-Sud/CNRS
- ◆ Asynchronous design for new device development: Laurent Fesquet – Grenoble INP
- ◆ Playing with number representations for energy efficiency: an introduction to approximate computing. Olivier Sentieys - INRIA, Univ. of Rennes 1
- ◆ Stochastic sampling machine for Bayesian inference: Raphael Frisch - Univ. of Grenoble Alpes

### Panel Session The next 20 years 6PM - 7:30 PM

- ◆ **IoT**: Adrian Ionescu – EPFL
- ◆ **Architecture**: Kirk Bresniker – IRDS
- ◆ **Devices**: Mustafa Badaroglu – IRDS
- ◆ **Communication** : Timothy Lee – IEEE

*Welcome Reception Cocktail*

## IRDS™ 2019 Spring Conference 8AM – 1 PM

- ◆ Overview: Paolo Gargini
- ◆ Application Benchmarking: Tom Conte
- ◆ System and Architecture: Kirk Bresniker
- ◆ More Moore: Mustafa Badaroglu
- ◆ Beyond CMOS and Emerging Research Materials: Shamik Das
- ◆ Cryogenic Electronics & Quantum Information Processing: Scott Holmes
- ◆ Outside System Connectivity: Michael Garner
- ◆ Yield Enhancement: Slava Libman
- ◆ Factory Integration: Supika Mashiro
- ◆ Lithography: Mark Neisser
- ◆ Environment, Health, Safety and Sustainability: Leo Kenny
- ◆ Metrology: George Orji
- ◆ Packaging Integration: Dev Gupta

### European NEREID Roadmap 2PM - 3:15 PM

- ◆ Overview: Francis-Balestra – GINP-CNRS/ Sinano Institute
- ◆ More than Moore - Smart sensors, Smart Energy and Energy Harvesting: David Holden – CEA-LETI
- ◆ System design and Heterogeneous Integration: Danilo De Marchi - Politecnico Di Torino

### SDRJ Session 3:15 - 4:30 PM

- ◆ Overview: Yoshihiro Hayashi – Systems and Devices Roadmap Japan
- ◆ Quantum Computing: Kae Nemoto, NII
- ◆ Communications: Speaker name to be confirmed

### Status and trends in Advanced Nanodevices 4:30 PM - 7 PM

- ◆ Small Slope Switches, TFET, FeFET: Adrian Ionescu – EPFL
- ◆ Advanced Simulation of Nanodevices: Luca Selmi - Univ. Unimore
- ◆ 2D Nanodevices: Paul Hurley - Tyndall
- ◆ Ferroelectric and ionic analog memory: Alan Seabaugh – Univ. Notre Dame, Indiana
- ◆ Ultrafast Spintronics: Prof. Jeff Bokor – Univ. California Berkeley

*Gala Dinner*

## IEEE Conference on Rebooting Computing 8AM – 7PM

- ◆ Overview: Arvind Kumar - IBM US

**Keynote speaker Future Technologies: Bill Chappell** - MTO/DARPA

### Session "Neuromorphic computing"

- ◆ Stefano Vassanelli - Univ. of Padova
- ◆ Joshua Yang - Univ. of Massachusetts

### Session "Quantum and probabilistic computing"

- ◆ Marc Sanquer - INAC
- ◆ Jean Simatic - CEO of Hawai.tech

### Session "Optical computing"

- ◆ Carsten Schuck - Univ. Münster
- ◆ Pérola Milman - Univ Paris Diderot, LMPQ, CNRS

**Keynote speaker Architecture: Wen-mei Hwu** - Univ. of Illinois

### Session "Energy efficient computing"

- ◆ Michael Frank - Sandia National Labs
- ◆ Natesh Ganesh - UMass Amherst
- ◆ Sandip Tiwari - Cornell University

### Session “Communications” 5G

- ◆ Paolo Gargini - IEEE Future Networks
- ◆ Gerhard P. Fettweis - TU, Dresden
- ◆ Timothy Lee - IEEE

### Session “Software”

- ◆ Sorin-Cristian Cheran - Hewlett Packard

### Session "Spintronics/Magnonics"

- ◆ Marius Costache - ICN2
- ◆ Alice Mizrahi - CNRS Thalès