



# NeurONN: Neuromorphic Computing with Oscillatory Neural Networks

Aida Todri-Sanial

► **To cite this version:**

Aida Todri-Sanial. NeurONN: Neuromorphic Computing with Oscillatory Neural Networks. Phase-Change Switch Workshop, 2020, Virtual, France. lirmm-03098863

**HAL Id: lirmm-03098863**

**<https://hal-lirmm.ccsd.cnrs.fr/lirmm-03098863>**

Submitted on 5 Jan 2021

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Phase-Change Switch Workshop on Neuromorphic Computing

## December 17, 2020

09:00 – 09:05 *Welcome Note from Organizers*  
**Siegfried Karg**, IBM Research Zurich, Switzerland

09:05 – 09:30 *Phase-Change Switch Project overview*  
**Adrian Ionescu**, EPF Lausanne, Switzerland

### *EU projects related to Neuromorphic computing*

09:30 – 09:55 *NeurONN: Neuromorphic Computing with Oscillatory Neural Networks*  
**Aida Todri-Saniai**, CNRS, LIRMM, France

09:55 – 10:20 *MANIC: Developing materials for neuromorphic devices and circuits*  
**Beatriz Noheda**, RU Groningen, The Netherlands

10:20 – 10:45 *MeMscales, Memory with multi-scale time constants for neuromorphic architectures*  
**Elisa Vianello**, CEA Leti, France

10:45 – 11:00 *Coffee Break*

### *Materials and Devices*

11:00 – 11:30 *Neuromorphic computing via device physics in resistive switching memories*  
**Daniele Ielmini**, Politecnico di Milano, Italy

11:30 – 12:00 *Radio Frequency tunable functions with VO<sub>2</sub> and Ge-doped VO<sub>2</sub>*  
**Andrei Müller**, EPF Lausanne, Switzerland

12:00 – 12:30 *Ion liquid gate induced changes in properties of oxide thin films*  
**Stuart Parkin**, MPI Halle, Germany

12:30 – 13:30 *Lunch Break*

Event address:

<https://ibm.webex.com/ibm/onstage/g.php?MTID=e85e55534f154ad9f04867ad6f56328da>

### *Neuromorphic Circuits & Architectures*

13:30 – 14:00 *Exploiting temporal dynamics for sensing*  
**Elisabetta Chicca**, RU Groningen, The Netherlands

14:00 – 14:30 *Computing with delays: Getting inspiration from plasticity in neuroglial circuits*  
**Renaud Jolivet**, Univ Geneva, Switzerland

14:30 – 15:00 *VO<sub>2</sub> coupled oscillators as hardware accelerators for convolutional neural networks*  
**Elisabetta Corti**, IBM Research Zurich, Switzerland

15:00 – 15:15 *Coffee Break*

### *Neuromorphic Computing*

15:15 – 15:45 *Algorithm-Circuits-Device Co-Design for Neuromorphic Intelligence*  
**Melika Payvand**, Univ Zurich, Switzerland

15:45 – 16:15 *Memristive Neuromorphic Systems*  
**Bernabé Linares-Barranco**, CSIC-IMSE, Spain

16:15 – 16:45 *Phase-change memory enables energy-efficient brain-inspired computing*  
**Manuel Le Gallo**, IBM Research Zurich, Switzerland



<https://phasechange-switch.org/>

