

Workshop on Unconventional Computing – Erice, 7 – 13 April 2026

Program

Day	Time	Title	Speaker
Tuesday 7	21:30-24:00	Welcome and get together (Marsala Room)	
Wednesday 8 Introduction to UC (<i>M. Fanciulli</i>)	8:45-9:00	Introduction to the Workshop	M. Fanciulli
	9:00-10:00	New Computational Models for Novel Physical Devices	S. Stepney
	10:00-10:30	Coffee break	
	10:30-11:30	Interrogating the brain with neuroelectronics: from synapses to neural circuit oscillators	S. Vassanelli
	11:30-12:30	Unconventional computing with novel devices and circuits, from concept to prototyping	V. Bragaglia
	12:30-14:30	Lunch	
NANOELECTRONICS I	15:00-16:00	Thermal aspects of memristive devices: from device design to thermal computing	S. Menzel
<i>(K. Hofmann)</i>	16:00-17:00	Emerging Memory Integration for Energy-Efficient Edge Computing	E. Covi
	17:00-17:30	Tea Break	
	17:30-18:30	Oxide memristors as dynamical elements for unconventional computing	S. Spiga
	19:30	Dinner	
Thursday 9 NANOELECTRONICS II (<i>V. Bragaglia</i>) (<i>W.v.d. Wiel</i>)	9:00-9:30	Synaptic nonlinear elements for Kolmogorov Arnold Networks	M. Fanciulli
	9:30-10:00	Precision Polymer Doping: a toolkit to control Si electronic properties	M. Perego
	10:00-10:30	Doping of Ultra-thin Si films: Exploring the Quantum world	A. Pulici
	10:30-11:00	Coffee Break	
	11:00-12:00	Nonlinear Computing in Reconfigurable Nonlinear-Processing Units	W. v d. Wiel
	12:00-13:00	Oscillator-based-ising machines (electronically based)	K. Hofmann
	13:00-15:00	Lunch	
	15:00-16:00	Nonlinear Heterogeneity in physical learning networks	J. C. Gartside
	16:00-16:30	Self-Contrastive Forward-Forward Learning for Few-Shot Training of Deeply Nonlinear Neuromorphic Hardware	X. Chen
	16:30-17:00	The Effect of HZO Nanolaminates on BEOL-Compatible WO ₃ -Based Ferroelectric Devices	E. Zaccaria
	17:00-17:30	Proton Radiation-Hardened HfZrO ₂ Ferroelectric Memory via WO _x Interlayer Engineering for Space Applications	E. Kim
	17:30-19:30	Tea break and POSTER SESSION	

	19:30	Dinner		
Friday 10 SPINTRONICS <i>(J.C. Gartside)</i>	9:00-10:00	Spintronic neuromorphic computing with frequency-selective synapses	J. Grollier	
	10:00-10:30	Coffee Break		
	10:30-11:30	Ising Machines Based on Spin Hall Nano-Oscillators, Spin Waves, and Acoustic Waves	J. Åkerman	
	11:30-12:30	Networking Stochastic, Non-linear and Dynamic Spintronic Devices	T. Hayward	
	12:30-13:00	Training the topology of sparse spintronic networks	K. Mirahi	
	13:00-14:30	Lunch		
	NANOELECTRONICS III <i>(T. Hayward)</i>	14:30-15:30	Memristive nanowire networks as dynamical systems for computing	G. Milano
		15:30-16:00	Multiterminal characterization of neuromorphic nanowire networks spatiotemporal dynamics	F. Michieletti
		16:00-16:30	RCbench: a unified framework for benchmarking reservoir computing systems	D. Pilati
		16:30-17:00	Tea Break	
		17:00-17:30	Equilibrium Propagation for Non-Conservative Systems	D. Abeele Vanden
		17:30-18:00	SiOx Nano Oscillator-Based Probabilistic Bit for Solving Complex Optimization Problems	J. Kim
		19:30	SOCIAL DINNER	
	Saturday 11 CHEMICAL <i>(G. Milano)</i>	9:00-10:00	Computing with reconfigurable arrays of picoliter chemical oscillators	H. Wolf
10:00-10:30		Coffee Break		
10:30-11:00		Electrochemically Programmable Chemical Oscillator Networks for Ultra-Low-Power Computing and Optimization	S. Agostini	
11:30-12:00		Backpropagation as Physical Relaxation: Exact Gradients in Finite Time	A. Scurria	
12:00-12:30		Volatile electrochemical metallization (ECM) cells for spiking neuron applications	J. Rasbach	
12:30-14:15		Lunch		
14:15-20:00		Excursion		
20:00		Dinner		
Sunday 12 APPLICATIONS/QUANTUM <i>(J. Grollier)</i>	9:30-10:00	Intersection of AI and Quantum: the dawn of a new algorithmic era	V. Bragaglia	
	10:00-10:30	Noise-aware AI subroutines for hybrid quantum-classical algorithms	J. Schuhmacher	
	10:30-11:00	Coffee Break		
	11:00-12:00	Making Music with Quantum Computing	E. Miranda	
	12:00-14:30	Lunch		

PHOTONIC UC (<i>B. Offrein</i>)	14:30-15:30	Opportunities for electronic and photonic unconventional computing approaches in AI systems	B. Offrein
	15:30-16:00	The role of photon (in)distinguishability in bosonic computational advantage	B. Butler
	16:00-17:00	Phase Change Memory: a technology to enhance computation at the edge	A. Redaelli
	17:00-17.30	Tea Break	
	17:30-18:30	Open discussion on the outlook for UC	S. Stepney
	18:30-18:45	Closing	M. Fanciulli
	19:30	Dinner	
Monday 13 (<i>S. Stepney</i>)	9:00-9:50	Free	
	9:50-10:40	Free	
	10:40-11:10	Free	
	12:00-14:00	Lunch- Departure	

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