

Tuesday, May 13

8:15	Welcome & Introductions	
8:30	Masoud Mohseni	Towards heterogeneous quantum-probabilistic supercomputing
8:55	Natalia Berloff	Efficient Encoding for Ising Hamiltonian minimization
9:20	Flaviano Morone	Solving combinatorial optimization problems through stochastic Landau-Lifshitz-Gilbert dynamical systems
9:45	Giacomo Pedretti	HW/SW codesign of heuristics and in-memory accelerator for solving SAT problems in the native space
10:00	Rutger Berns	Predicting sampling advantage of Ising Machines for quantum simulations
10:15	Seokmin Hong	Trade-offs in Network Complexity of Ising Machines
10:30	Coffee Break	
10:55	Supriyo Datta	Can p-Bits be useful for feedforward neural networks?
11:20	Hyunsoo Yang	Computing with magnetic tunnel junctions
11:45	Shun Kanai	Designs of the stochastic magnetic tunnel junctions for spintronics- based probabilistic computing
12:10	Jordan Athas	Impact of random bitstream quality on probabilistic Ising machines using CMOS and voltage-controlled magnetic tunnel junctions
12:25	Lunch	
13:45	Eli Yablonovitch	Circuits That Solve Optimization Problems by Exploiting Physics Inequalities
14:10	Zoltan Toroczkai	Accelerating continuous-time solvers for hard optimization via many-body interactions
14:35	Maxwell Aifer	Thermodynamic Bayesian inference
14:50	Nihal Sanjay Singh	Probabilistic Bits for Generative AI: Case Study with Diffusion Models
15:05	Nikhat Khan	A Hybrid Approach Integrating Dynamical Systems into a Probabilistic Framework for Solving Large Scale Combinatorial Optimization
15:20	Victor Gonzalez	Operational optimization of weighted graphs in a time-multiplexed Ising machine with hardware constraints
15:35	Coffee Break	
16:00	Davide Pierangeli	Ising machine based on nonlinear polarization oscillators
16:15	Arthur Montanari	Designing disordered oscillator Ising machines for global optimization
16:30	Atiyeh Abbasi Jalal	CMOS-Compatible MOSFET-based Voltage-Controlled Oscillator Network for Low-Power Ising Machine
16:45	Ali Bazzi	Reconfigurable ring oscillator-based Ising networks in 22nm CMOS: investigating design space trade-offs
17:00	Ravi Mehta	Integrated photonics and electronics chip-based Ising machine with analog feedback loop for high speed and low power application
17:15	Toon Sevenants	Implementing a spatially multiplexed analog Ising machine with a spatial light modulator
18:30	Conference Reception & Poster Session (Tech Institute, Northwestern University)	

Wednesday, May 14

8:15	Announcements	
8:30	Masanao Yamaoka	Outline and present development status of CMOS annealing
8:55	Nikhil Shukla	Navigating the journey from analog oscillator dynamics to efficient combinatorial optimization solvers
9:20	Giovanni Finocchio	GPU-accelerated Ising Machines
9:45	Andrea Grimaldi	Analysis of constrained parallel tempering for circle neighborhood travelling salesman problem instances
10:00	Christian Duffee	Probabilistic computing with extended variables in a CMOS integrated circuit
10:15	Elisabetta Valiante	A Guide on Benchmarking Advanced Hardware for Solving Optimization Problems
10:30	Coffee Break	
10:55	Hayato Goto	Development of simulated bifurcation algorithm
11:20	Peter McMahon	Spatially multiplexed photonic Ising solving with ultra-low optical energy
11:45	Yuan Gao	50,000-Spin Count Integrated Photonic Chip Ising Solver
12:00	Kyungduk Kim	Accelerating a coherent Ising machine by XY-Ising spin transition

12:15	Liam Quinn	Experimental and numerical demonstration of an alternating, intensity-resolved, coherent Ising machine
12:30	Lunch	
13:45	John Paul Strachan	Energy landscapes of Ising machines and hardware proposals for higher-order solvers
14:10	Dmitri Strukov	Unified Framework for Efficient High-Order Ising Machine Hardware Implementations
14:35	Stefan Boettcher	Vectorized implementation of the extremal optimization heuristic
14:50	Simon Arnold	Continuous probabilistic computing with multi-state energy models: a comparative application study of Ising, Potts and XY models
15:05	Bjarke Frederiksen	Comparative study of Potts machine dynamics and performance
15:20	Sudeera Gunathilaka	Coherent Ising machines with chaotic amplitude control: extension to quadratic unconstraint binary optimisation and heuristic models
15:35	Coffee Break	
16:00	Eleonora Raimondo	Disruptive Annealing Process for Probabilistic Ising Machine and Hybrid Ising Machine Exploration
16:15	Navid Anjum Aadit	Towards Extreme Scaling of Ising Machines with Distributed p-Computers
16:30	Takuya Okuyama	Relaxed Momentum Annealing with Alternating Direction Method of Multiplier
16:45	Aditya Shukla	Relaxed dynamical Ising machine on FPGA
17:00	Xiangyi Zhang	Distributed framework to accelerate in-memory computing solvers: an application for the SAT problem
17:15	Saavan Patel	Parallel Probabilistic Ising Architectures: Large scale digital Ising Machines for Optimization
18:30	Social Dinner (The Barn, Evanston)	
Thursday, May 15		
8:15	Announcements	
8:30	Johan Akerman	Ising machines based on spintronic nano-oscillators, spin waves, and acoustic waves
8:55	Andrew Kent	Solving Combinatorial Optimization Problems and Generating Random Numbers with Stochastic Actuated MTJs
9:20	Artem Litvinenko	Towards a large-scale 500-spin bulk-acoustic-wave Ising machine
9:35	Nuno Cacoilo	Ultra-small perpendicular superparamagnetic tunnel junctions
9:50	Jae-Chun Jeon	Programmable true random number generation from electrically readable nanoscopic racetracks
10:05	Kinoshita Takuma	Dynamics of Stochastic Magnetic Tunnel Junction with a Synthetic Antiferromagnetic Free Layer for Probabilistic Computing
10:20	Shiva Konakanchi	Electrically tuneable picosecond-scale chiral magnetic fluctuations: towards novel and robust probabilistic bits
10:35	Coffee Break	
10:55	Aida Tordi-Sanial	Oscillatory neural network design and implementation with CMOS oscillators coupled by BEOL integrated resistive memory
11:20	Damien Querlioz	Memristor-based Ising machines: opportunities and trade-offs
11:45	Suyoun Lee	Stochastic artificial neuron based on Ovonic Threshold Switch (OTS) and its applications for Restricted Boltzmann Machine (RBM)
12:00	Yuyao Kong	Digital compute-in-memory Ising annealer with ferroelectric capacitor-based nvSRAM for travelling salesman problem
12:15	Sai Li	MCMC Engine Using MRAM Chip with In-situ Intrinsic 0-100% Probability Manipulation for Bayesian Machine Learning
12:30	Lunch	
13:45	Jie Han	Approximate, Stochastic and Ising Computing
14:10	Michael Huang	Scalability of dynamical system solvers: challenges and opportunities
14:35	Kenneth Zick	Revealing two new best solutions for large Gset problems and the promise of hardware-friendly heuristic solvers
14:50	Robbe De Prins	How to deal with external fields in Ising machines that use analog spins
15:05	Shu Zhou	Phase analysis of Ising machines and their implications on optimization
	Fabian Böhm/Giacomo	Accelerating XORSAT problems natively with in-memory computing for applications in cryptography and telecommunication
15:20	Pedretti	

Posters, May 13

Conference Reception & Poster Session (Tech Institute, Northwestern University) - May 13, 18:30

P-1	William Rogers	Use of stray fields in a 2D square nanomagnet lattice for correlation and spectral engineering of random binary matrix generators
P-2	Haruna Kaneko	Impact of the Statistical Properties of Stochastic Magnetic Tunnel Junctions-based Random Telegraph Noises on Probabilistic Computing Performance
P-3	Sam Reifenstein	Fine Tuning Annealing Schedules with Reinforcement Learning
P-4	Biman Chattopadhyay	20000 variable all-to-all connected Ising machine with gain-dissipative feedback and amplitude control
P-5	Guy Verschaffelt	Examining the impact of spin amplitude resolution on the performance of analog Ising machines
P-6	Jacob Lamers	Analysing classical adiabatic annealing with continuation techniques
P-7	M.O.A. Ellis	Probabilistic computing using stochastic magnetic domain wall neural networks for reinforcement learning
P-8	Moslem Noori	Experiment design for reliable evaluation of probabilistic optimizers
P-9	Filip Sabo	Improving the classification accuracy of Oscillatory Neural Networks with the help of Max-Cut
P-10	Jennifer Volk	The potential of flux quantum electronics for scaling Ising machines
P-11	Thomas Pluck	Swarm digital ising machines
P-12	Hanu Arava	The Role of Intermediate States in Artificial Spin Ice Inspired Computation
P-13	Sai Sakunthala Guddanti	Passenger reallocation in alternate flights using quantum optimization
P-14	Hasantha Ekanayake	Engineering stability in dynamical systems models to improve Ising Hamiltonian solutions
P-15	Zezhi Wu	Ultra-low power and tuneable Ising machine built with tunnel diode- based Fitzhugh-Nagumo oscillators
P-16	Ragib Ahsan	Ultralow-power in-sensor neuronal computing in frequency domain with oscillatory retinal neurons
P-17	Ruqi Shi	Symmetry-breaking in coupled microrings: enabling on-chip photonic Ising spin realization