

TMRC 2022 Invited Presentations

Monday August 29th, 9:00 am to 12:15 pm

Session A: Reader and Channel			
Session chair: Hidetoshi Saito (Kogakuin University)			
Presentation	Mon AM	Title	Speaker
A1	9:00-9:30 AM	Dual free layer sensor for next generation read head	Xiaoyong Liu WDC
A2	9:30-10:00 AM	Prospects for a 10 nm shield-shield read head using a non-local spin valve	Randy Victora University of Minnesota
A3	10:00-10:30 AM	Reduced complexity LDPC decoding for magnetic recording using machine learning techniques	Lara Dolecek UCLA
	10:30-10:45 AM	Break	
A4	10:45-11:15 AM	Machine learning based equalization for asynchronous multitrack detection in TDMR	Elnaz Banan Sadeghian Stevens Institute of Technology
A5	11:15-11:45 AM	Convolutional neural network-based media noise prediction and equalization for TDMR turbo-detection with writer-reader drift	Benjamin Belzer Washington State University
A6	11:45-12:15 PM	ASIC implementation of machine learning read channel in 28 nm CMOS for TDMR	Yuwei Qin CMU

Monday August 29th, 1:30 pm to 5:15 pm

Session B: HAMR, Media and Beyond			
Session chair: Randy Victora (University of Minnesota)			
Presentation	Mon PM	Title	Speaker
B1	1:30-2:00 PM	Spin-stand measurements to extract the switching distributions of heat-assisted magnetic-recording media	Pierre-Olivier Jubert WDC
B2	2:00-2:30 PM	The scaling capability of heat assisted magnetic recording	Lei Xu WDC
B3	2:30-3:00 PM	Zero-state insertion advanced HAMR media design for ultra-high density recording	Thomas Chang Seagate Technology
	3:00-3:15 PM	Break	
B4	3:15-3:45 PM	Machine learning approach for evaluation of nanodefects and magnetic anisotropy in FePt granular films	Hossein Sepehri-Amin NIMS
B5	3:45-4:15 PM	Multidimensional signal processing schemes for high areal density heated-dot magnetic recording	Hidetoshi Saito Kogakuin University
B6	4:15-4:45 PM	Applications of the projection method as a fast metrology tool for nanomagnet arrays	Bethanie Stadler University of Minnesota
B7	4:45-5:15 PM	All optical switching in Pt-transition metal alloys	Jade Scott Queen's University Belfast

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Tuesday August 30th, 9:00 am to 12:15 pm

Session C: MAMR, ePMR and Novel Technologies			
Session chair: Niranjn Natekar (WDC)			
Presentation	Tue AM	Title	Speaker
C1	9:00-9:30 AM	Demonstration of coupled oscillation in a dual field generation layer fabricated in a MAMR head	Yuji Nakagawa Toshiba Corporation
C2	9:30-10:00 AM	Demonstration of substantial improvements in recording process with MAMR	Naoyuki Narita Toshiba Corporation
C3	10:00-10:30 AM	Spin-torque-oscillator designs in microwave assisted magnetic recording	Wenyu Chen Headway Technologies
	10:30-10:45 AM	Break	
C4	10:45-11:15 AM	Efficiency enhanced microwave assisted magnetic recording	Jian-Gang (Jimmy) Zhu CMU
C5	11:15-11:45 AM	DC current path optimization for energy-assisted magnetic recording	Asif Bashir WDC
C6	11:45-12:15 PM	Composite magnet solution for high performance green drive	Kaizhong Gao International Business and Technology Service Corp.

Tuesday August 30th, 1:30 pm to 5:15 pm

Session D: MRAM Product Development			
Session chairs: Goran Mihailovic (WDC) and Mustafa Pinarbasi (M2)			
Presentation	Tue PM	Title	Speaker
D1	1:30-2:00 PM	STT-MRAM - Status and outlook	Daniel Worledge IBM
D2	2:00-2:30 PM	X-nm CoFeB/MgO magnetic tunnel junction for high-speed to high-retention applications	Butsurin Jinnai Tohoku University
D3	2:30-3:00 PM	Dynamical switching properties in perpendicular shape anisotropy magnetic tunnel junctions	Nuno Cacoilo SPINTEC
	3:00-3:15 PM	Break	
D4	3:15-3:45 PM	Simultaneous measurement of the exchange parameter and saturation magnetization using propagating spin waves	Hans Nembach NIST
D5	3:45-4:15 PM	Anatomy of WER (write error rate) issues for MRAM with a perpendicular free layer	Dmytro Apalkov Samsung Semiconductor
D6	4:15-4:45 PM	Fabrication and individual addressing of STT-MRAM bit array with 50 nm full pitch	Lei Wan WDC
D7	4:45-5:15 PM	Heavy ion bit response of 256 Megabit non-volatile spin transfer torque magnetoresistive random access memory	Romney R. Katti Honeywell Corp.

TMRC 2022 Invited Presentations

Wednesday August 31st, 8:30 am to 12:15 pm

Session E: Advanced MRAM			
Session chair: Alan Kalitsov (WDC)			
Presentation	Wed AM	Title	Speaker
E1	8:30-9:00 AM	Magneto-ionic control of spin textures and interfaces	Kai Liu Georgetown University
E2	9:00-9:30 AM	Topological insulators for efficient spin-orbit torques	Yabin Fan WDC
E3	9:30-10:00 AM	Bipolar electric-field switching of perpendicular magnetic tunnel junctions through voltage-controlled exchange coupling	Jian-Ping Wang University of Minnesota
E4	10:00-10:30 AM	Probing channel materials and device structures for field free spin-orbit torque switching	Lim Sze Ter Inst. of Materials Research and Engineering, A*STAR
	10:30-10:45 AM	Break	
E5	10:45-11:15 AM	L10-phase FePd thin films with low damping and high thermal stability for high performance memory	Daniel B. Gopman NIST
E6	11:15-11:45 AM	Enhancing the performance of spintronic devices at the atomic scale using ion irradiation	Dafiné Ravelosona Spin-Ion Technologies
E7	11:45-12:15 PM	Atomically ordered unit-cell thick Heusler compounds for racetrack and MRAM	Panagiotis Filippou IBM

Wednesday August 31st, 1:30 pm to 5:00 pm

Session F: Neuromorphic Computing			
Session chair: Patrick Braganca (WDC)			
Presentation	Wed PM	Title	Speaker
F1	1:30-2:00 PM	Trends and applications for emerging memory technologies	Thomas Coughlin Coughlin Associates
F2	2:00-2:30 PM	Experimental demonstration of neuromorphic network with STT-MTJ synapses	Joseph S. Friedman The University of Texas at Dallas
F3	2:30-3:00 PM	Forecasting the outcome of spintronic experiments with a neural network	Damien Querlioz Paris-Saclay University
	3:00-3:15 PM	Break	
F4	3:15-3:45 PM	Passive frustrated nanomagnet reservoir computing	Alexander J. Edwards The University of Texas at Dallas
F5	3:45-4:15 PM	Implementation of a binary neural network on a passive array of magnetic tunnel junctions	Nitin Prasad NIST
F6	4:15-4:45 PM	Neuromorphic computing based on magnetic domain wall devices	S. N. Piramanayagam Nanyang Technological University
	4:45-5:00 PM	Conference Close	