2021 IEEE 32nd Magnetic Recording Conference (TMRC 2021)

Virtual Conference 16 – 19 August 2021



IEEE Catalog Number: CFP21TMR-POD **ISBN:**

978-1-6654-4038-7

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IEEE Catalog Number:	CFP21TMR-POD
ISBN (Print-On-Demand):	978-1-6654-4038-7
ISBN (Online):	978-1-6654-4037-0

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TMRC 2021 Invited Presentations

	Sessio	Session A: HAMR n chair: Randall Victora (University of Minnesota)		
Presentation	Mon PM	Title	Speaker	l
A1	6:00-6:30 PM	Opto-thermal simulation of metallic smear's impact on HAMR technology	Robert Smith Western Digital	1
A2	6:30-7:00 PM	Simulation of a thermally efficient HAMR ridge waveguide NFT on an AIN heat sink	Wenyi Zhang Carnegie Mellon University	3
A3	7:00-7:30 PM	Quasi-equilibrium Stoner-Wohlfarth versus strongly out-of-equilibrium dynamics in HAMR	Alain Truong Headway Technologies	N/2
	7:30-7:45 PM	Break		
A4	7:45-8:15 PM	Interplay of thermal and magnetic fields in HAMR	Niranjan Natekar Western Digital	5
A5	8:15-8:45 PM	Direct measurement of magnetic timing jitter in writers	Peter Czoschke Seagate Technology	7

Monday August 16th, 6:00 pm to 8:45 pm (EDT)

Monday August 16th, 6:00 pm to 9:45 pm (EDT)

		Session B: MRAM I		
	S	ession chair: Jordan Katine (Western Digital)		
Presentation	Mon PM	Title	Speaker	1
B1	6:00-6:30 PM	Demonstration of narrow switching distributions in STT-MRAM arrays for LLC applications at 1x nm node	Guohan Hu IBM	N /4
B2	6:30-7:00 PM	3-dimensional integration of epitaxial magnetic tunnel junctions with new materials for future MRAM	Shinji Yuasa AIST	N/#
B3	7:00-7:30 PM	Revisiting Fe/MgO/Fe(001): giant tunnel magnetoresistance up to ~420% at room temperature	Hiroaki Sukegawa NIMS	9
	7:30-7:45 PM	Break		
B4	7:45-8:15 PM	Recent progresses in STT-MRAMs, SOT-MRAMs for low power Al/IoT Processors	Tetsuo Endoh Tohoku University	N/#
B5	8:15-8:45 PM	Voltage control spintronics memory (VoCSM)-based low energy consumption non-volatile logic-gates for binary neural networks	Hiroaki Yoda Spin-Orbitronics Technologies	11
В6	8:45-9:15 PM	Ferromagnet-induced spin-orbit torques	Kyung-Jin Lee KAIST	N/#
B7	9:15-9:45 PM	Spin-orbit torque switching based on topological spin textures and magnons	Hyunsoo Yang National University of Singapore	N/#

TMRC 2021 Invited Presentations

	S	Session C: MRAM II Session chair: Alan Kalitsov (Western Digital)		
Presentation	Tue AM	Title	Speaker]
C1	8:00-8:30 AM	Chiral spin textures and chiral spin-orbit torques for spintronic memories	Stuart Parkin Max Planck Institute for Microstructure Physics	
C2	8:30-9:00 AM	Interplay of voltage control of magnetic anisotropy, spin transfer torque, and heating on spin-orbit torque switching of magnetic tunnel junctions	Viola Krizakova ETH Zurich	
C3	9:00-9:30 AM	PMA mechanisms at Fe/MgO interfaces: On its voltage control and temperature dependence	Fatima Ibrahim SPINTEC	
	9:30-9:45 AM	Break		
C4	9:45-10:15 AM	Spin orbit torques from ferromagnetic layers with out-of-plane spin polarization	Andrew Kent New York University	
C5	10:15-10:45 AM	Large perpendicular magnetic anisotropy and voltage controlled magnetic anisotropy effects at CoFe/MgO interface	Bhagwati Prasad Western Digital	
C6	10:45-11:15 AM	Cryogenic MRAMs for superconducting computers	Minh-Hai Nguyen Western Digital	
C7	11:15-11:45 AM	Using dopants and alloying to optimize spin Hall materials for MRAM devices	Derek Stewart Western Digital	

Tuesday August 17th, 8:00 am to 11:45 am (EDT)

Tuesday August 17th, 7:00 pm to 9:45 pm (EDT)

	Ş	Session D: HAMR / MAMR / Read		
	See	ssion chair: Niranjan Natekar (Western Digital)		J
Presentation	Tue PM	Title	Speaker	1
D1	7:00-7:30 PM	DC write head current driven energy assisted magnetic recording	Asif Bashir Western Digital	N
D2	7:30-8:00 PM	Rotated read head design for high-density heat-assisted shingled magnetic recording	Randall Victora University of Minnesota	N
	8:00-8:15 PM	Break		
D3	8:15-8:45 PM	Micromagnetic studies of spin torque oscillator reader phase noise and SNR	Olle Heinonen Argonne National Laboratory	19
D4	8:45-9:15 PM	TDMR performance gain with machine learning data detection channel	Yuwei Qin Carnegie Mellon University	21
D5	9:15-9:45 PM	Asynchronous partial-response equalization to time-varying target for multitrack detection of asynchronous tracks	Elnaz Banan Sadeghian Stevens Institute of Technology	23

TMRC 2021 Invited Presentations

		Session E: MRAM III		
		Session chair: Dmytro Apalkov (Samsung)		
Presentation	Wed PM	Title	Speaker	1
E1	8:00-8:30 AM	Mitigating the write stochasticity in STT MRAMs: suppressing back hopping and making the wall motion reproducible	Thibaut Devolder Université Paris-Saclay, CNRS	N/
E2	8:30-9:00 AM	Demonstration of nanosecond operation in stochastic magnetic tunnel junctions	Chris Safranski IBM	N/
E3	9:00-9:30 AM	Single-event effects in STT MRAM	Douglas Martin Naval Surface Warfare Systems	25
	9:30-9:45 AM	Break		
E4	9:45-10:15 AM	Technology transfers into the defense industry: implications for advanced microelectronics in the future of national security	Mike Burkland Raytheon Technologies	27
E5	10:15-10:45 AM	Magnetoresistive random access memories for space and radiation-hardened applications	Romney R. Katti Honeywell Aerospace	29
E6	10:45-11:15 AM	Physical mechanisms affecting performance of perpendicular STT-MRAM cells	Goran Mihajlovic Western Digital	32
E7	11:15-11:45 AM	STT-MRAM for automotive applications	Kerry Nagel Everspin	34

Wednesday August 18^{th} , 8:00 am to 11:45 am (EDT)

Wednesday August 18th, 6:00 pm to 9:15 pm (EDT)

	Session o	Session F: MAMR hair: Yasushi Kanai (Niigata Institute of Technolog	v)	ļ
Presentation	Wed AM	Title	Speaker	1
F1	6:00-6:30 PM	Magnetic recording assisted by spin-transfer-torque-induced magnetization reversal and dynamics	Wenyu Chen Headway Technologies	36
F2	6:30-7:00 PM	Sub-nanosecond switching of spin-transfer-torque device for energy assisted perpendicular magnetic recording	Yunfei Ding Western Digital	38
F3	7:00-7:30 PM	Analysis of a spin-torque oscillator using injection locking to an external microwave field	Hirofumi Suto NIMS	40
	7:30-7:45 PM	Break		
F4	7:45-8:15 PM	Improvement of dual FGL structure for MAS effect dominant MAMR head	Masayuki Takagishi Toshiba Corporation	N
F5	8:15-8:45 PM	Media optimisation for microwave-assisted magnetic recording	Simon Greaves Tohoku University	42
F6	8:45-9:15 PM	Spin torque oscillator for microwave assisted magnetic recording	Jian-Gang (Jimmy) Zhu Carnegie Mellon University	N

TMRC 2021 Contributed Presentations

Sessio	Session Chairs: Ben Belzer (Washington State University) Simon Greaves (Toboku University)				
Presentation	Thu PM	Title	Speaker	1	
G1	6:00-6:20 PM	Two serial multi-layer perceptrons for signal detection and modulation code decoding for bit-patterned media recording	Seongkwon Jeong Soongsil University		
G2	6:20-6:40 PM	A study of performance evaluation with neural network detector in SMR system	Madoka Nishikawa Ehime University		
G3	6:40-7:00 PM	A study of equalization for reproducing a double-layer magnetic recording medium	Yasuaki Nakamura Ehime University		
G4	7:00-7:20 PM	Turbo-detection for multilayer magnetic recording using deep neural network-based equalizer and media noise predictor	Amirhossein Sayyafan Washington State University		
G5	7:20-7:40 PM	Multi-track detection assisted by multi-task neural network using 2D soft transition information for heat assisted interlaced magnetic recording	Yushu Xu Shanghai Jiao Tong University		
	7:40-7:55 PM	Break			
G6	7:55-8:15 PM	Evaluation of sputtered tape media with hard disk drive components	Pierre-Olivier Jubert Western Digital		
G7	8:15-8:35 PM	Causes of HAMR transition curvature dependence on bit length	Kun Xue University of Minnesota		
G8	8:35-8:55 PM	STO oscillation dependence on in-gap field and main pole magnetization in MAMR	Ryo Itagaki Niigata Institute of Technology		
G9	8:55-9:15 PM	Large impact of spin asymmetry at half-metallic Co2Fe0.4Mn0.6Si/CoFe interface on current-perpendicular-to-plane giant magnetoresistance	Yuichi Fujita NIMS		

Thursday August 19th, 6:00 pm to 9:15 pm (EDT)

Thursday August 19th, 6:00 pm to 9:15 pm

		Session H: MRAM IV	
		Session chair: Thomas Boone (Spin Memory)	
Presentation	Thu PM	Title	Speaker
H1	6:00-6:20 PM	The practical material challenges invloved in using the topological insulator BiSb in a spin transfer device	Brian R. York Western Digital
H2	6:20-6:40 PM	Noble metal under layer influence on the temperature dependent Gilbert damping in L10 FePd films with large perpendicular magnetic anisotropy	Dingbin Huang University of Minnesota
H3	6:40-7:00 PM	Switching current density of perpendicular magnetization by spin-orbit torque	Lijun Zhu Cornell University
H4	7:00-7:20 PM	Comparison of two parametric mechanisms reversal in FeCoB nanomagnet. Theory and experiment	Vadym Zayets AIST
	7:20-7:35 PM	Break	
H5	7:35-7:55 PM	Strain-spin coupling induced high-frequency magnetoacoustic resonance in perpendicular magnetic multilayers	Delin Zhang University of Minnesota
H6	7:55-8:15 PM	High spin Hall angle in sputtered BiSb topological insulator (bottom)/ ferromagnet with in-plane magnetization on sapphire substrates	Julian Sasaki Tokyo Institute of Technology
H7	8:15-8:35 PM	LDPC joint decoding scheme for STT MRAM storage	Jinghua Liu Fuzhou University
H8	8:35-8:55 PM	Magneto-optical detection of memory operation in magnetic nanowire device	Mao Takahashi NHK
H9	8:55-9:15 PM	The Enhancement of Temperature Gradient by Tunneling Spin Scattering in Magnetic Tunnel Junction	Shuhan Liu Xi'an Jiaotong University