TMRC 2025 | Schedule

Location	28th July (Monday)	29th July (Tuesday)	30th July (Wednesday)
Sakura Hall 1st floor	On-site registration 8:00 am	On-site registration 8:00 am	On-site registration 8:00 am
Sakura Hall Auditorium	Welcome Address 8:50 am Session A HAMR 9:00 am to 12:15 pm	Session C Advances Systems, Sensors and Alternative Storage 9:00 am to 12:15 pm	Session E Spintronics I: STT MRAM, New Switching Mechanism 9:30 am to 12:15 pm
	Coffee Break 10:40 am - 11:00 am	Coffee Break 10:40 am - 11:00 am	Coffee Break 10:40 am - 11:00 am
Sakura Hall 1st Floor	Lunch 12:15 pm to 1:30 pm	Lunch 12:15 pm to 1:30 pm	Lunch 12:15 pm to 1:30 pm
Sakura Hall Auditorium	Session B Heads and Media 1:30 pm to 4:45 pm	Session D Neuromorphic Computing, Devices for AI 1:30 pm to 4:45 pm	Session F Spintronics II: SOT MRAM, Racetrack Memory 1:30 pm to 4:20 pm Closing Remarks
	Coffee Break 3:10 pm - 3:30 pm	Coffee Break 3:10 pm - 3:30 pm	Coffee Break 2:45 pm - 3:05 pm
Sakura Hall 1st Floor	Session P1 Posters (Invited & Contributed) Bierstube 5:00 pm to 7:00 pm	Session P2 Posters (Invited & Contributed) 5:00 pm to 6:30 pm	
Hotel Monterey		Banquet 7:00 pm to 9:00 pm	
		Keynote 8:00 pm to 8:30 pm	

TMRC 2025 Invited Presentations

Monday 28th July, 9:00 am to 12:15 pm

Session A: Heat Assisted Magnetic Recording (HAMR)

Session chairs: R. Victora (University of Minnesota) and M. A. Bashir (Western Digital Corporation)

Presentation	Mon AM	Title	Speaker
A1	9:00-9:25 AM	Laser power optimization effect on jitter and write width in HAMR	C. Keener Western Digital Corporation
A2	9:25-9:50 AM	Shingled magnetic recording using HAMR technology	Y. Tomoda Toshiba
A3	9:50-10:15 AM	Thermal footprints measurements for heat assisted magnetic recording	P. O. Jubert Western Digital Corporation
A4	10:15-10:40 AM	Thermal spin-torque heat-assisted magnetic recording	S. Isogami NIMS
	10:40-11:00 AM	Break	
A5	11:00-11:25 AM	HAMR absorbing carbonaceous smear combustion kinetics in different oxygen environment	T. Trinh Western Digital Corporation
A6	11:25-11:50 AM	HAMR ADC CMR and SMR with MSMR-2R/3R gain: linear density vs. trackpitch	S. Granz Seagate
A7	11:50-12:15 PM	Measured and modeled responses for heat assisted magnetic recording up to ultra-high areal densities	R. Wood Western Digital Corporation

Monday 28th July, 1:30 pm to 4:45 pm

Session B: Heads and Media

Session chairs: S. Hernandez (Seagate)

Presentation	Mon PM	Title	
B1	1:30-1:55 PM	Anisotropic spin exchange modeling and Curie temperature dispersion in L10-FePt nanoparticles for HAMR media	K. Ochiai Resonac Corporation
B2	1:55-2:20 PM	The impact of in-plane grains on HAMR performance and THMap metrics	N. Natekar Western Digital Corporation
B3	2:20-2:45 PM	Phase-field study of microstructure formation of FePt-C nanogranular film for heat-assisted magnetic recording media	Y. Matsuoka NIMS
B4	2:45-3:10 PM	Domain-wall induced noise reduction in an exchange-coupled HAMR multilayer media model	L. Xu Western Digital Corporation
	3:10-3:30 PM	Break	
B5	3:30-3:55 PM	Determination of coupling state in a dual-FGL STO using injection locking	Y. Nakagawa Toshiba Corporation
B6	3:55-4:20 PM	Near field transducer reliability improvements due to media stack	M. A. Bashir Western Digital Corporation
B7	4:20-4:45 PM	An ionic liquid (IL)-based media lube for hard disc drives (HDDs)	L. Li University of Pittsburgh

TMRC 2025 Invited Presentations

Tuesday 29th July, 9:00 am to 12:15 pm

Session C: Advanced Systems, Sensors, and Alternative Storage

Session chairs: Y. Nakamura (Ehime University) and A. Kikitsu (Toshiba)

Presentation	Tue AM	Title	Speaker
C1	9:00-9:25 AM	Vector recording: advancing areal density in HAMR with innovative read head design	R. Victora University of Minnesota
C2	9:25-9:50 AM	Pushing the limits of areal density: fusing advanced channel coding, HAMR, and SMR in next-generation HDDs	J. Goode Western Digital Corporation
C3	9:50-10:15 AM	Efficient multidimensional signal processing scheme for heated-dot magnetic recording with triple-layered bit patterned media	H. Saito Kogakuin University
C4	10:15-10:40 AM	64 channel tape recording	R. Biskeborn Western Digital Corporation
	10:40-11:00 AM	Break	
C5	11:00-11:25 AM	Viability of three level recording in heat assisted magnetic recording	J. Zhu Carnegie Mellon University
C6	11:25-11:50 AM	Development of Co-Mn-Al thin films with giant anomalous Hall effect towards read head applications	M. K. Manikketh NIMS
C7	11:50-12:15 PM	Large magnetoresistance and high spin-transfer torque obtained in CPP-GMR devices with Heusler alloy electrodes through high-throughput compositional optimization	V. Barwal NIMS

Tuesday 29th July, 1:30 pm to 4:45 pm

Session D: Neuromorphic Computing, Devices for AI

Session chairs: S. N. Piramanayagam (NTU) and S. Li (Beihang University)

Presentation	Tue PM	Title	Speaker
D1	1:30-1:55 PM	Probabilistic and analog spintronic devices for energy-efficient AI hardware	S. Fukami Tohoku University
D2	1:55-2:20 PM	Scalable and energy-efficient on-device SNNs enabled by magnetic tunnel junctions	S. Li Beihang University
D3	2:20-2:45 PM	Self-regulated spintronic long short-term memory for spiking neural networks	C-H. Lai National Tsing Hua University
D4	2:45-3:10 PM	A magnetic Hopfield neural network capable of self-learning	W. Yu Fudan University
	3:10-3:30 PM	Break	
D5	3:30-3:55 PM	Spintronic foundation cells for large-scale integration	Q. Shao Hong Kong University of Science and Technology
D6	3:55-4:20 PM	Toward all-electric non-volatile intelligence in spintronic reservoir	Z. Jing National University of Singapore
D7	4:20-4:45 PM	Noise-aware training of dynamical physical neural networks of spintronic nanodevices	M. O. A. Ellis University of Sheffield

TMRC 2025 Invited Presentations

Wednesday 30th July, 9:00 am to 12:15 pm

Session E: Spintronics I - STT MRAM, New Switching Mechanisms			
Session chairs: ** (**) and ** (**)			
Presentation	Wed AM	Title	Speaker
E1	9:00-9:25 AM	Advanced magnetic tunnel junctions for voltage-controlled MRAM	S. Yuasa AIST
E2	9:25-9:50 AM	Demonstration of reliable memory operation in the world's smallest 1 Selector-1 MTJ cell	K. Sugiura Kioxia Korea
E3	9:50-10:15 AM	TEL PVD technology for spintronic devices	C-M. Park TEL US
E4	10:15-10:40 AM	Magnetic ordered alloy based free layer materials for high-speed writing of MRAM devices with high retention	M. Gottwald IBM
	10:40-11:00 AM	Break	
E5	11:00-11:25 AM	Voltage control of interfacial antiferromagnetic spins based on magnetoelectric effect	Y. Shiratsuchi Osaka University
E6	11:25-11:50 AM	Nanoelectromechanical spin memory: a scalable and energy-efficient hybrid for next-generation nonvolatile storage	J. Hong UC Berkeley
E7	11:50-12:15 PM	Strain control of spintronic devices	V. Lomakin UCSD

Wednesday 30th July, 1:30 pm to 4:20 pm

Session F: Spintronics II - SOT MRAM, Racetrack Memory			
Session chairs: ** () and ** ()			
Presentation	Wed PM	Title	Speaker
F1	1:30-1:55 PM	Towards field-free and ultra-low power spintronic devices: leveraging altermagnetism and orbitronics	R. Maddu Nanyang Technological University
F2	1:55-2:20 PM	From antiferromagnet to altermagnet: the controllable spin source for MRAM	C. Song Tsinghua University
F3	2:20-2:45 PM	Fully field-free spin-orbit torque switching induced by spin splitting effect in altermagnetic RuO_2	Y. Xu Nanjing University
	2:45-3:05 PM	Break	
F4	3:05-3:30 PM	Energy efficient spin-orbit-torque devices for memory and computing by new materials, new physics and voltage control	J-P. Wang University of Minnesota
F5	3:30-3:55 PM	Ultra-high efficiency of SOT-MRAMs using MTJs with strain-induced magnetic anisotropy	H. Yoda YODA-S Inc.
F6	3:55-4:20 PM	Magnetic skyrmion transport in racetracks: toward the realization of skyrmion racetrack memory	S. Yang KRISS

TMRC 2025 Poster Session 1

Poster session 1
Monday 28th July, 5:00 pm to 7:00 pm

Poster session 1 also includes posters from the invited talks of Sessions A, B, and C		
Session chair: ** ** (**)		
Poster	**Title**	**Presenter, affiliation**
P1-1	Three-track detection using a multi-layer perceptron for dual-layer bit-patterned magnetic recording systems	C. Warisarn King Mongkut's Institute of Technology Ladkrabang
P1-2	Layered magnetization reversal by multi-head writing in three-dimensional magnetic recording	Y. Jian Huazhong University of Science and Technology
P1-3	Interference mitigation via top-layer-assisted signal rescaling in dual-layer 3D magnetic recording	K. Luo Huazhong University of Science and Technology
P1-4	AI-based layout optimization of HDDs in full-rack heterogeneous server and storage systems	Y-J. Liao National Tsing Hua University
P1-5	Write current control based on THMap in HAMR	A. Sakoguchi Western Digital Corporation
P1-6	Improvement of dual-layer HAMR recording conditions using SMR	Y. Nakamura Ehime University
P1-7	Crystal orientation improvement by carbon addition for FePt-oxide granular films for heat assisted magnetic recording media	K. K. Tham Tanaka Kikinzoku
P1-8	Heat assisted magnetic recording (HAMR) smear characterization by using head-disk interface (HDI) sensor	W. Zhao Western Digital Corporation
P1-9	In-plane component suppression and K_u enhancement of FePt-oxide granular films by using (Pt, Ag)-C/ FePtCu-C stacked granular buffer layers	D. Miyazaki Tanaka Kikinzoku
P1-10	Experimental study on ternary recording possibility in heat assisted magnetic recording	T. Nakagawa Western Digital Corporation
P1-11	Effect of diffusion stopper layer on surface morphology of MgO underlayer of L10-FePt granular layer for HAMR	D. Isurugi Tohoku University
P1-12	Dark-laser-heating (DLH) using ultra-fast laser pulsing for mode hop mitigation in heat assisted magnetic recording (HAMR)	S. Rajauria Western Digital Corporation
P1-13	High-density L10-FePt grains on an electrically conductive (Mg,Ti)O underlayer for HAMR media	A. R. Dilipan NIMS
P1-14	Optimized multi-level heat assisted magnetic recording media with Mo spacer layer for high-capacity data storage	S. Helen NIMS
P1-15	Patterned tape head air bearing surface development	K. Kuroki Western Digital Corporation
P1-16	Magnetic properties and microstructure of FePt (BN/AlN, Ag, C) film	J-L. Tsai National Chung Hsing University
P1-17	Effect of MgTiO/Pt-BN/MgTiO underlayer on FePt-X grain size and distributions	V. Bollapragada Western Digital Corporation
P1-18	Utilizing the transversal encoder with modified PRML detection for dual-layer magnetic recording	A. Khametong King Mongkut's Institute of Technology Ladkrabang
P1-19	Inter-layer interference (ILI) suppression in dual-layer bit-patterned magnetic recording systems	N. Rueangnetr King Mongkut's Institute of Technology Ladkrabang
P1-20	A study on the fitness of GA for improving SP decoding performance	M. Nishikawa Ehime University

TMRC 2025 Poster Session 2

Poster session 2
Tuesday 29th July, 5:00 pm to 6:30 pm

Poster session 2 also includes posters from the invited talks of Sessions D, E, and F		
Session chair: ** ** (**)		
Poster	**Title**	**Presenter, affiliation**
P2-1	A high-speed and high-reliable fully digital STT-MRAM based computing-in-memory for binary neural network	Y-C. Wang Tohoku University
P2-2	Study on correlation between TMR and exchange bias in MTJs for STT-MRAM applications	S. Seo University of Ulsan
P2-3	Multi-bit magnetic memory using magnetic multilayer pillars with two-terminal structure	S. Honda Kansai University
P2-4	Ensemble learning for STT-MRAM channel detection	C. D. Nguyen FPT University
P2-5	Proposal and micromagnetic validation of bipolar switching in voltage-controlled MRAM devices	W. Won NIMS
P2-6	Multi-bit magnetic memory based on a vertically magnetized pillar on two perpendicularly magnetized pinning layers	S. Honda Kansai University
P2-7	NIST SP 800-90B compliant perpendicular magnetic tunnel junction based true random number generator	Q. Jia University of Minnesota
P2-8	Topological heterostructure engineering toward advanced read head technologies for hard disk drives	Z. Wen NIMS
P2-9	Magnetization reversal cluster size under microwave field excitation	N. Kikuchi Akita University
P2-10	Impact of metal, oxide, and hybrid metal-oxide interlayers on spin-Hall effect in BiSb topological insulator and magnetic interfaces	Z. Ruixian Institute of Science Tokyo
P2-11	Optical control of RKKY coupling and perpendicular magnetic anisotropy in a synthetic antiferromagnet	J. Wu Guangdong University of Technology
P2-12	Complex magnetism, Griffiths-like phase, large spontaneous and conventional exchange bias effect in Eu2CoMnO6	A. Nayak National Institute of Technology Andhra Pradesh
P2-13	Depinning of domain walls in a notched ferromagnetic nanostrip: role of inertial and nonlinear damping effects	S. Dolui National Institute of Technology Andhra Pradesh
P2-14	Damping modification in epitaxially grown continuous L10-FePt thin films with different substrates	Y. Sasaki NIMS
P2-15	Giant bipolar unidirectional photomagnetoresistance	Y. Jiang Suzhou University of Science and Technology
P2-16	Interface design for concurrent realization of high perpendicular magnetic anisotropy and low magnetic damping in Fe/MgO	Y. N. Apriati Mie University
P2-17	Effect of excimer laser annealing on crystallization and atomic ordering of $Co_2Mn_{0.5}Fe_{0.5}Ge$ Heusler alloy thin films toward spintronic applications	H. Suto NIMS
P2-18	Anisotropic exchange stiffness of perpendicularly magnetized Co/Pt multilayer thin film	M. Al-Mahdawi Libyan International University
P2-19	Exploring Skyrmion deformation in antiferromagnetic systems: a pathway to next-generation memory devices	X. Wang Hong Kong University of Science and Technology