



Center for Magnetic Recording Research

University of California – San Diego

La Jolla, California 92093-0401

Research Review and Advisory Council Meeting



October 25-26, 2012

Website: <http://cmrr.ucsd.edu>

Research Review Schedule – Thursday, October 25, 2012

8:30 AM -- Continental Breakfast at CMRR

8:55 AM -- Welcome and Introduction

9:00 AM -- Tribology and Mechanics

Professor Frank E. Talke

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| A1 | Effect of Temperature, Humidity and Bonded Lube Ratio on Head Wear in Hard Disk Drives | <i>Liane Matthes</i> |
| A2 | Numerical Simulation of Intermittent Contact at the Head Disk Interface using Dynamic Air Bearing Simulator | <i>Pablo Salas-Mendez</i> |
| | Investigation of Slider Disk Contact in Air-Helium Gas Mixtures | <i>Zhengqiang Tang</i> |
| A3 | Effect of Pitch Angle and Roll Angle on Lube transfer | <i>Deng Pan</i> |
| A4 | Dimple / Gimbal Interface Studies | <i>Youyi Fu & Young Woo Seo</i> |

10:25 AM -- 15 MINUTE BREAK

10:40 AM -- Dynamic Modeling and Servo Technology

Professor Raymond A. de Callafon

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| B1 | Adaptive Regulation of Time Varying Disturbances in a Tape Storage System | <i>Huazhen Fang</i> |
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11:00 AM -- SPECIAL SESSION

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| C1 | Zero-leakage electronics and opportunities in miniaturized wireless systems | <i>Assistant Professor Patrick Mercier</i> |
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12:15 PM -- Lunch at CMRR

1:15 PM -- Design and Fabrication of Nano Magnetic Materials

Professor Sungho Jin

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| D1 | Nanoprobe Arrays for Controlled and Massively Parallel Nanofabrication | <i>Li Han Chen</i> |
| | Magnetically Guided Si Shaping and Slicing | <i>Justin Kim</i> |
| D2 | Remote Magnetically Activated Drug Release using Magnetic Particle Loaded Core/Shell Nanocapsules | <i>Caleb Kong</i> |

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| 2:00 PM -- Magnetic Materials & Devices | | |
| <i>Research Professor Ami E. Berkowitz</i> | | |
| E1 | Anomalous Magnetic Domain Behavior in LTP- MnBi | <i>Phi Nguyen</i> |
| 2:15 -- 10 MINUTE BREAK | | |
| 2:25 PM—Signal Processing and Coding | | |
| <i>Professor Paul H. Siegel</i> | | |
| F1 | Precoding Mapping Optimization for Error Rate Improvement for Magnetic Recording Channels | <i>Aman Bhatia</i> |
| F2 | Numerical Issues Affecting LDPC Error Floors | <i>Brian Butler</i> |
| F3 | Efficient Iterative LP Decoding of LDPC Codes with Alternating Direction Method of Multipliers | <i>Xiaojie Zhang</i> |
| F4 | Constrained Codes That Mitigate Inter-cell Interference in Read/Write Cycle for Flash Memories | <i>Minghai Qin</i> |
| 3:40 -- 10 MINUTE BREAK | | |
| 3:50 PM – Non-Volatile, Solid- State Memory | | |
| <i>Assistant Professor Steve Swanson & Professor Paul H. Siegel</i> | | |
| G1 | The Effect of Read Cycling on SLC NAND Flash Memory | <i>Scott Kayser</i> |
| G2 | Challenges in Reliably Sanitizing Solid State Disks | <i>Michael Wei</i> |
| G3 | MARS: Redesigning Transaction Mechanisms for Next-Generation, Solid-State Drives | <i>Trevor Bunker</i> |
| 4:50 PM -- Poster Session | | |
| 5:30 PM -- Advisory Council Meeting | | |
| 7:00 PM -- Advisory Council Dinner | | |

Research Review Schedule --Friday, October 26, 2012

9:00 AM -- Continental Breakfast at CMRR

9:25 AM -- Welcome and Introduction

9:30 AM – Magnetic Films and Nanostructures

Professor Eric Fullerton

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| H1 | Asymmetric Write Error Rates of Magnetic Tunnel Junctions | <i>Jimmy Kan</i> |
| H2 | Material Development for Perpendicularly Magnetized Tunnel Junctions | <i>Matthias Gottwald</i> |
| H3 | Ultrafast Magnetic Vortex Chirality Switching | <i>Vojtech Uhler</i> |
| H4 | Composite Bit Patterned Media for Microwave Assisted Magnetic Recording | <i>Nasim Eibagi</i> |
| | Electric Field Control of Nanoscale Magnetism | <i>Jonathan Sapan</i> |

10:30 AM – 10 Minute Break

10:40 AM – Tape-Head interface

Associate Research Scientist Frederick E. Spada

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| I1 | Reducing Tape Head Deposit Formation and Pole Tip Recession Via Potentiostatic Control of Head Structures* | <i>Frederick Spada</i> |
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11:00 AM—Micromagnetic Modeling & Recording Physics

Associate Professor Vitaliy Lomakin

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| J1 | Micromagnetics and Recording Physics at CMRR | <i>Vitaliy Lomakin</i> |
| J2 | Including Eddy Current Effects in Micromagnetics | <i>Ruinan Chang</i> |
| J3 | Energy Barriers Calculations for MRAM Free Layer. | <i>Marco Escobar</i> |
| J4 | Domain Wall Propagation in Antiferromagnetically Coupled Dual-Layer Nanowires | <i>Marko Lubarda</i> |

12:30 PM—Electronic and Transport Properties of Nanoscale Systems

Professor Massimiliano Di Ventra

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| K1 | Memcomputing: a Computing Paradigm to Store and Process Information | <i>Massimiliano Di Ventra</i> |
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1:00 PM – Informal Lunch – CMRR Second Floor Patio

3:00 pm Adjournment - Thank you!