



IEEE Magnetics Society NEWSLETTER

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Martha Pardavi-Horvath, Editor

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 4. **TMRC 2005** 16th Magnetic Recording Conference, Stanford, CA, USA, *August 15-17, 2005*
 5. **ICST'05** Int. Con. on Sensing Technology, Palmerston, New Zealand, *November 21-23, 2005*
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Chapters Corner

If you are the local chapter chairman reading this, please share with us all that's happening in your chapter and local area (e.g. talks, people activity, magnetics news, company or university news etc.). Forward a paragraph (or two), a picture, a reference to an interesting article or something inventive or newsworthy (in your opinion) to me at r.dee@ieee.org so we can include in the next MagSoc newsletter.

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Dr. Richard H. Dee

Magnetics Society Chapters Chair

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IEEE Magnetics Society Distinguished Lecturers for 2005

Half-Metals, Spin Torque, and Nanorings

Chia-Ling Chien

The Johns Hopkins University

The exploration of magnetic nanostructures in recent years has resulted in a string of discoveries such as interlayer coupling, giant magnetoresistance (GMR), exchange bias, and tunneling magnetoresistance. Some of these effects were utilized as read heads in high-density magnetic recording and nonvolatile magnetic storage only a few years after the original discovery. In this talk, I will describe several new topics in magnetic nanostructures from inception to realization to potential applications. Most magnetoelectronic properties are the results of the spin polarization of the constituent materials. The ultimate spin-polarized material with 100% spin polarization is called the half-metal. For example, magnetic tunnel junctions with half-metal electrodes would have the largest possible effect, switching between conducting and insulating states. The unique characteristics of halfmetals, the experimental identifications, and the confirmation of half-metals to date will be described. Since electrons have spin in addition to charge, a spin-polarized current carries angular momentum. For a large current density, the angular momentum can exert a substantial torque onto a receiving magnetic entity to excite spin waves or even to switch its magnetization. The spin torque effects are accomplished in the absence of an external magnetic field. The salient aspects of the spin torque effects in different contexts, such as switching and magnetic recording without a magnetic field, will be described. Nanorings are small entities with special attributes. A magnetic nanoring can support vortex state despite its very small size. The two chiralities of the vortex state can be exploited for magnetic recording purposes. Multilayered nanorings have also been proposed as vertical random access memory (VRAM) units. However, fabrication of nanorings using e-beam lithography has considerable limitations in the number of rings, ring size, and areal density. We have developed a new method with which a large number (10^9) of small (100 nm) rings can be fabricated with a very areal density of 45 rings per square micrometer. The magnetic and other characteristics of such arrays of nanorings will be described.



Chia-Ling Chien received the B.S. degree in physics from Tunghai University, Taichung, Taiwan, R.O.C., in 1965 and the Ph.D. degree in physics from Carnegie Mellon University, Pittsburgh, PA, in 1972. He has been a Member of the faculty in the Department of Physics and Astronomy of Johns Hopkins University, Baltimore, MD, since 1976, where he is the Jacob L. Hain Professor in Arts and Sciences. He currently directs the Material Research Science and Engineering Center on Nanostructured Materials at Johns Hopkins. His recent research focuses on magnetic nanostructures including magnetic granular solids, nanowires, multilayers, and arrays of rings and dots, and the exploration of GMR, exchange bias, half-metals, spin torque effects, Andreev reflection, and point-contact spectroscopy. He has written more than 300 journal articles and holds several

patents. He is one of the ISI's 1120 most cited physicists. He has served as Meeting Chair and Chair of the Advisory Committee of the Conference on Magnetism and Magnetic Materials. He has been awarded honorary professorships at Nanjing, Lanzhou, and Fudan Universities in China. Dr. Chien is a Fellow and the 2004 recipient of the David Adler Award of the American Physical Society.

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Micro-Fabrication Techniques for Magnetic Information Storage Devices: From Bubbles to Thin-Film Recording Heads to Nanomagnetic Structures

Robert E. Fontana, Jr.

Hitachi Global Storage Technologies

This lecture examines magnetic device structures from the perspective of thin-film processing. Techniques for forming magnetic device structure minimum features will be compared with semiconductor processing. Future storage density growth in both magnetic memories and magnetic recording will be projected using semiconductor roadmaps. The “nano” characteristics (thickness and length scale) of next-generation magnetic thin-film heads and magnetic memory devices will be compared with solid-state semiconductor designs. In the past 25 years, the bit cell size for storage products incorporating magnetic device structures decreased from 156 μm^2 bit cells (IBM 3390 disk drive) to 0.007 μm^2 (Hitachi Travelstar 5K100 mobile disk drive). For the same period, the bit cell size in nonvolatile memory products incorporating magnetic device structures decreased from 625 μm^2 (TI 100 kb bubble memory) to 1.6 μm^2 (Motorola 4Mb magnetic random access memory). These 10 to 10 increases in information storage densities resulted from increased understanding in the physics of magnetic phenomena, from advances in materials science and engineering for magnetic thin films, from development of new magnetic modeling techniques, and from dramatic improvements in the capability to fabricate magnetic device structures with smaller minimum features. The manufacture of cost-effective magnetic device based information storage products requires high-yield processing technologies for the magnetic transducer or memory element in these products. Such processing technologies are now producing devices with 120 nm features (80 Gb/in storage densities) and these same processing technologies are extendable to 30 nm features (1 Tb/in storage densities). The lecture will conclude with discussions on nanoscale processing challenges.



Robert E. Fontana, Jr. received the B.S., M.S., and Ph.D. degrees in electrical engineering from the Massachusetts Institute of Technology, Cambridge, in 1969, 1971, and 1975, respectively. He is a Research Staff Member within the recording head processing function of the San Jose Research Center, Hitachi Global Storage Technologies (GST), San Jose, CA. His technical activities have concentrated on developing and improving thin-film processing techniques for fabricating magnetic device structures, first at Texas Instruments from 1975 to 1981 with magnetic bubbles, then from 1981 to 2002 at IBM with thin-film heads, and from 2003 to the present at Hitachi GST with novel flux detecting sensors and nanostructure fabrication with e-beam lithography. During his career, he has transferred processing methodologies for magnetic bubbles, magnetoresistive thin-film heads, spin-valve giant magnetoresistive thin-film heads, and tunnel-valve thin-film heads from

research concepts to manufacturing realizations. He has authored 37 papers on magnetic devices and processes and has 55 patents in thin-film magnetic structures. Dr. Fontana was named an IEEE Fellow in 1996 and he received the IEEE Cleo Brunetti Award for excellence in the art of electronic miniaturization in 2000. He was elected to the National Academy of Engineering (NAE) in 2002 for his contributions in magnetic device processing. He has served as President of the IEEE Magnetics Society (2001, 2002), as General Chair of the 1996 Magnetism and Magnetic Materials Conference, as General Chair of the 2004 Joint International Magnetics Conference and Magnetism and Magnetic Materials Conference, and is serving as an NAE member on the National Research Council's (NRC) Board on Manufacturing and Engineering Design (2003–2005).

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Dynamics in Magnetic Micro- and Nanostructures

Burkard Hillebrands

Technische Universität Kaiserslautern

For applications in sensors and in data storage, the dynamic properties of microstructures and nanostructures have gained increasing attention. The fundamental excitations in these objects are confined spin waves, and it is useful in particular to understand their properties in view of the noise spectrum in sensor and magnetoresistive random access memory (MRAM) applications. The lecture addresses the dynamics in homogeneously and inhomogeneously magnetized objects starting with an introduction to spin waves and the effects of finite dimensions. In inhomogeneous systems the excitation spectrum is complex, and new phenomena, such as localization and tunneling of modes, are discussed. The key points are illustrated by results obtained by space- and time-resolved Brillouin light scattering, which allows one to follow experimentally the propagation of spin-wave packets and to present the results in an animated format. To conclude the lecture, the analysis of ultra-high-frequency dynamic properties (2–100 GHz) of small magnetic elements with spatial resolution in the 300 nm range is presented.



Burkard Hillebrands received the diploma and Ph.D. degrees in physics from the University of Cologne, Cologne, Germany, in 1982 and 1986, respectively. After a postdoctoral stay at the Optical Sciences Center, Tucson, AZ, he received the habilitation from the RWTH Aachen, Aachen, Germany, in 1993. He was an Associate Professor at the University of Karlsruhe, Karlsruhe, Germany, in 1994. Since 1995, he has been a Full Professor at the University of Kaiserslautern, Kaiserslautern, Germany. He is the coordinator of the German priority program “Ultrafast Magnetization Processes,” the vice coordinator of the German research unit “New Materials with High Spin Polarization,” and he coordinates a European network on “Ultrafast Magnetization Processes in Advanced Devices.” He is currently the head of the Material Research Center for Micro- and Nanostructures (MINAS) at the University of Kaiserslautern. He is a member of the granting board

for collaborative research centers (SFB) of the senate of the Deutsche Forschungsgemeinschaft and a member of the Editorial Board of the *Journal of Physics D: Applied Physics*. His research field is mostly in magnetoelectronics. His special interests are in spin dynamics, material properties of thin magnetic films and multilayers, exchange bias, as well as in elastic properties of layered structures. In the field of spin dynamics, he is particularly interested in dynamic magnetic excitations in confined magnetic structures, magnetic switching, and nonlinear magnetic phenomena using space- and time-resolved Brillouin light scattering spectroscopy and time-resolved Kerr effect techniques. He has published more than 170 articles, five patents and patent applications, seven book contributions, and he is co-editor of the Springer-Verlag book series on “Spin Dynamics in Confined Magnetic Structures.”

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CALL FOR NOMINATIONS

2006 IEEE Reynold B. Johnson Data Storage Device Technology Award

The IEEE Reynold B. Johnson Data Storage Device Technology Award is presented for outstanding contributions to the advancement of information storage with emphasis on technical contributions in computer data storage device technology.

The award may be presented to an individual, team, or multiple recipients up to three in number. The recipient of the award receives a bronze medal, certificate, and cash honorarium.

The nomination **deadline is 1 July 2005.**

For nomination forms, visit the IEEE Awards Web Site,
www.ieee.org/portal/pages/about/awards/sums/johnsondsdt.html,
or contact

IEEE Awards Activities,
445 Hoes Lane, Piscataway, NJ, USA, 08855-1331;
tel: +1 732 562 3844;
email: awards@ieee.org

IEEE New Guidelines on Multiple Submission And Prior Publication

For many years, IEEE multiple publication policy has established a useful standard for authors and publication volunteers. Authors should only submit original work that has neither appeared elsewhere for publication, nor which was under review for another refereed publication. Multiple publication is considered wasteful of funds and space, does not give members and libraries full value for their subscriptions, and causes citation and indexing confusion. It is to be avoided except under unusual circumstances.

However, until recently, there had been little or no specific guidance on what should be done in the event these standards were not followed. On 18 November 2004, the IEEE Publications Products and Services Board approved new policies and procedures for handling reported cases of authors who have submitted the same manuscript to two or more publications, or who have not properly cited the reuse of their previously published work in newly submitted papers. These new guidelines are part of the recently approved (June 2004) guidelines for handling complaints of plagiarism. Section "8.2 Publication Guidelines" of the PSPB Operations Manual now contains another new sub-section entitled "Guidelines for Adjudicating Prior Publication, Multiple Submission, and Reuse of Previous Publications." The purpose of this new section is to describe the editors' and Society's prerogative with respect to acceptable reuse of previously published material ; the author's obligations regarding multiple submission, prior publication and reuse of previously published work; and appropriate corrective actions that correspond to the degree or type of misconduct.

The new guidelines recognize that it is common in technical publishing for material to be presented at various stages of its evolution. As one example, this can take the form of publishing early ideas in a workshop, more developed work in a conference, and fully developed contributions as journal or transactions papers. This publication process is an important means of scientific communication. At the same time, however, the IEEE requires that this evolutionary process be fully referenced by the author. Authors who do not properly cite their previous work, or who submit a given manuscript to two or more publications without informing the editor that the paper is concurrently under review by another publication, are subject to corrective actions, such as a reminder that the practice is considered inappropriate scholarly practice, a requirement to submit an apology to the publication editor for possible publication, and/or suspension of publication in the IEEE publication where the offense took place for 1 year or, if appropriate, the next volume of the conference proceedings.

It is at the discretion of each IEEE Organizational Unit whether or not to allow multiple submissions. The editor of a publication may choose to re-publish existing material for a variety of reasons, including promoting wider distribution and serving readers by aggregating special material in a single publication. This practice continues to be recognized and accepted by the IEEE.

An updated version of the PSPB Operations Manual is now available at

<http://a957.g.akamai.net/f/957/3680/1h/www.ieee.org/organizations/pubs/pab/opsmanual.pdf>

The new multiple submission guidelines appear in section 8.2 Publication Guidelines.

For more information, contact

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IEEE News

SENIOR MEMBERSHIP

Elevate your membership!

Requirements for elevation to IEEE Senior Member

IEEE Bylaw I-105.3 sets forth the criteria for elevation to Senior Member Grade, as follows:

"... a candidate shall be an engineer, scientist, educator, technical executive or originator in IEEE-designated fields. The candidate shall have been in **professional practice for at least ten years** and shall have shown **significant performance over a period of at least five** of those years."

There is no cost to convert to a Senior Member. "Senior" refers to professional experience, not age, and you do not need to be a "senior citizen" to be a Senior Member.

For full information visit the [IEEE Senior Member Web pages](#)

- Once you determine that you fulfill the [requirements](#) for Senior Member (SM) grade, identify your three references who must be IEEE Senior Members or Fellows.
- If you have difficulty in locating individuals to serve as your references, contact your local Section or Chapter for assistance. For help in contacting your Section/Chapter Chair, email Denise Howard at senior-member@ieee.org.
- If you have been notified by a Section officer that he or she intends to nominate you for Senior Member grade, the nominator serves as one reference as long as he/she is a Senior Member or Fellow. Otherwise, the required number of references is still three in addition to the nomination.
- Alternatively, contact your Section Chair and ask if he or she can nominate you. This will help your Section earn a rebate at the end of the year through the [Nominate a Senior Member Initiative](#).

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IN THE **JANUARY** ISSUE:

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1. Student Ethics Competitions Planned for All 10 IEEE Regions
2. Matching Dollars Add Weight to Gift Giving
3. Educational Activities Awards Recognize Nine
4. IEEE Fellow Low Teck Seng Holds Special View of Teaching
5. Two Candidates Run for 2006 President-Elect
6. Awards Board Program Needs You
7. Regional Conferences Bring Technology Home
8. Record Number of Papers Collected in Power Electronics Proceedings

IEEE-USA Today's Engineer A Monthly webzine

<http://www.todaysengineer.org> -

1. Latest *IEEE-USA TODAY'S ENGINEER* Webzine Covers Getting the Most Out of Your Education, Air Space System Modernization, H-1B Training Funds, Globalizing EWeek
2. IEEE-USA Files Amicus Brief in U.S. Supreme Court to Prevent Copyright Infringement, Preserve Technological Innovation in Electronic File Sharing
3. Join IEEE-USA for the 2005 Workforce Congressional Fly-in, 8-9 March
4. Attend the IEEE-USA Leadership Workshop in Tucson, 11-13 March
5. 10th Annual Science, Engineering and Technology Congressional Visits Day Set for 10-11 May
6. Special EWeek Message from the President Applauds Engineers

The **IEEE** is the world's largest technical professional society with approximately 360,000 members in 170 countries. Through its members, the IEEE is a leading authority on areas ranging from aerospace, computers, and telecommunications to biomedicine, electric power, and consumer electronics. The IEEE produces 30 percent of the world's literature in the electrical and electronics engineering and computer science fields, and has developed more than 900 active industry standards. The organization also sponsors or cosponsors more than 300 international technical conferences each year. Additional information is available at www.ieee.org.

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MagNews

LAS VEGAS--Hitachi is going big and small with its drives.

By Michael Kanellos

URL: http://netscape.com.com, netscape.com.com/2100-9584_22-5517469.html

Hitachi Global Storage Technologies, the hard-drive division of the Japanese giant, announced at the Consumer Electronics Show here that it has reduced the size of its minidrives and its 1.8-inch drives through better packaging and shrinking the electronics.

"Mikey," the code name for the smaller minidrive, is roughly 20 percent smaller than current versions. It will also debut with around 8GB to 10GB of storage capacity, said Bill Healy, senior vice president of product strategy and marketing for the company.

"Slim," a drive using a platter with a 1.8-inch diameter, is about 10 percent smaller than its peers. It will hold 60GB to 80GB of data.

The size reductions were not accomplished by cutting the size of the platters. The platters in Mikey measure an inch in diameter, the same as in current minidrives. However, the motors and other electronic parts are smaller. The company also removed a compact flash connector. As a result, Mikey drives can't be used as memory cards--they have to be embedded into a device.

The increases in density (current Hitachi minidrives max out at 4GB) do not come through adding platters. Instead, engineers found ways to store more data on the same surface. The drive industry in recent years has doubled, or nearly doubled, capacity annually.

While Hitachi minidrives are mostly now featured in small music players like the iPod mini, the smaller size means that Mikey drives will start to penetrate the phone market. With video and commerce becoming more common on cell phones, handhelds will need for storage capacity.

"People are even talking about building in projector capacity," he said, so that pictures taken on cell phones can be beamed onto flat surfaces for easier viewing. Slim drives are found in larger music players like the original iPods.

Devices containing Mikey and Slim drives will come out in time for the 2005 holiday season, he added.

IBM invented the minidrive in the 90s but didn't sell many. Part of it was IBM's historical focus on business users, according to Healy, a former IBM executive.

"IBM didn't see the consumer. Hitachi is the GE of Japan. They make rice cookers, refrigerators, nuclear power plants," he said. The Hitachi storage group, so far this fiscal year, is profitable in the always difficult drive market.

At the other end of the spectrum, Hitachi will come out with a 3.5-inch diameter drive (the size usually found in desktops) with 500GB of storage. According to Hitachi, it is the largest-capacity 3.5-inch drive yet. Competitors have released 400GB drives.

"We're starting to push this for set-top boxes," Healy said.

The 500GB drive comes out in February and will sell for about \$520 at retail.

Western Digital to enter minidrive arena

By Richard Shim

URL: http://netscape.com.com, netscape.com.com/2110-1040_22-5542511.html

Hard drive maker **Western Digital** announced Wednesday that it will be entering the mini hard drive market in the second quarter, when it begins shipping a one-inch product. Western Digital's one-inch drives will be available as CompactFlash Type II cards and will be integrated into products and will reach capacities up to 6GB. The company has yet to determine pricing for its drives.

Western Digital joins a growing list of companies, including Hitachi, Seagate and Toshiba, that are addressing the growing market as portable devices, such as digital audio players and cameras, begin to incorporate hard drives.

For hard-drive makers, getting small is becoming a passing fad.

By Michael Kanellos

URL: http://news.zdnet.com/2100-9584_22-5532612.html

While consumers have gone bonkers for music players and other sleek devices sporting tiny hard drives, disk drive companies say there's little room, and even less desire, for further reducing the size of the drive platters--the silver disks that spin around and hold data.

Since the platters constitute a substantial portion of the overall volume of the drive, this means a ceiling looms for shrinking drive sizes and potential increased competition from flash memory.

What's new:

Gear such as MP3 players with tiny drives are all the rage, but drive makers say their platters can only get so small.

Bottom line:

Because drive platters take up lots of room, drives cannot be shrunk much more without losing data storage. This does, however, leave more room for competition from flash memory.

[More stories on this topic](#)

"The disk drive is not going to get much smaller," said Jim Porter, an analyst at Disk/Trend.

The problem goes back to [Archimedes](#) and some basic science. Reducing the diameter of a drive platter greatly reduces the surface area for storing data. And less available storage space makes it more difficult for drives to distinguish themselves against [flash memory](#). Typically, flash memory accesses data faster, but drives can provide far greater storage capacity for the same amount of money.

"The trade-off in size is not as important as the trade-off in capacity," said Bill Healy, senior vice president of product strategy and marketing for Hitachi Global Storage Technologies.

Hitachi, which makes the drive found in the [iPod Mini](#), has no plans to further shrink the 1-inch-diameter platter found in those drives. The company will, however, shrink the overall size of its mini drives by developing smaller motors and reducing packaging, Healy said.

Similarly, Maciek Brzeski, vice president of marketing for the storage division of Toshiba, says

the Japanese giant is not interested in shrinking the 0.85-inch-diameter platters in its mini drive, which is featured in a [video camera](#) coming soon.

This doesn't mean that mini drives won't continue to improve. Design innovations such as perpendicular recording will allow drive makers to increase current capacities on small drives from the 4GB and 5GB range to 8GB to 10GB within a year. Brzeski, Healy and several analysts predict that drive makers will be able to maintain an advantage over flash when it comes to large-capacity devices. When 10GB mini drives hit the market next year, 10GB of flash memory might cost 10 times as much, Porter speculated.

Better packaging will also enable drive makers to reduce their size and volume. "[Mikey](#)," the code name for a Hitachi drive that comes out in devices next holiday season, will be 20 percent smaller than current mini drives.

Increased storage capacity and packaging reductions will enable hard-drive makers to insert their products into cell phones, which now almost exclusively rely on flash memory.

"People are even talking about building in projector capacity," he said, so that pictures taken on cell phones can be beamed onto flat surfaces for easier viewing, Healy said.

Still, because the platters occupy a significant portion of the overall space in a drive, size reductions are limited. A visual examination of an opened mini drive from [Cornice](#) with a 1-inch platter shows that the platter occupies more than half of the surface area. Another substantial portion is taken up by the hard-drive arm.

Reducing platter size is also constrained by the fact that a motor sits in the middle of the platter.

"Any time you shrink the disk, you halve the capacity," said [Dave Reinsel](#), an analyst at IDC. Toshiba's 0.85-inch drive maxes out at 4GB. Consequently, 0.5-inch drive would be limited to 2GB of capacity, which would be hard-pressed to compete against flash chips on price.

This is potentially troubling for the disk drive industry because flash memory chips will relentlessly continue to economize on real estate and cost per memory bit. [Moore's Law](#) will reduce the cost of chips and enable manufacturers to increase memory capacity at the same time. [Novel packages](#) will let manufacturers stack four chips in a space that traditionally held one. Advanced Micro Devices will also come out with flash chips that hold four bits per cell rather than two bits.

Ultimately, if flash improves at a slightly faster rate than mini drives do, it could enable flash to scrape away market share in some areas. Flash might not be competitive at the high end of the market, where 10GBs or 20GBs are needed, but it might get more competitive for midrange devices. "You've got flash on the other side that is growing," Reinsel said.

The notion that platters will stop shrinking is somewhat ironic, considering that they are just beginning to sell after a 10-year coming-out party. IBM invented the mini drive back in the early 1990s but couldn't commercially exploit it. IBM then sold its hard-drive division to Hitachi in 2002.

Hitachi then landed its drive in the iPod Mini, a popular portable music player that Apple Computer debuted [a year ago](#).

QUIZ

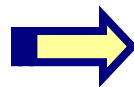
WHO IS THIS CHILD?



Solution

Go to the

END



Conference announcement 1



INTERNATIONAL MAGNETICS CONFERENCE

INTERMAG 2005

APRIL 4 - 8, 2005
 NAGOYA CONGRESS CENTER
 NAGOYA, JAPAN

SUBMISSION DEADLINES

▪ Digests	November 23, 2004
▪ Manuscripts	February 7, 2005



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Conference announcement 2

HMM 2005



5th International Symposium on Hysteresis and Micromagnetic Modeling

May 30 – June 1, 2005

Budapest, Hungary

<http://www.HMM2005.bme.hu>

Organized by the

Budapest University of Technology and Economics

in cooperation with the

Hungarian Academy of Sciences

Research Institute for Technical Physics and Materials Science

Pollack Mihaly College of Engineering, University of Pecs

Call for Papers

The **5th International Symposium on Hysteresis and Micromagnetic Modeling (HMM-2005)** will be held at Budapest, Hungary. The previous Symposia were held at The George Washington University, Virginia Campus. Ashburn, VA, USA (1996), University of Perugia. Perugia, Italy (1999), The George Washington University, Virginia Campus. Ashburn, VA, USA (2001), and at the University of Salamanca. Salamanca, Spain (2003). The 5th International Symposium on Hysteresis and Micromagnetic Modeling is devoted to the 100 year anniversary of birth of Hungarian scientist F. Preisach, the creator of the hysteresis model, bearing his name.

Venue: Hungarian Academy of Sciences, Budapest, Hungary, Roosevelt Sq. 9.

Topics of the Symposium

- General hysteresis and coupled problems, mathematics of hysteresis, statistical aspects, etc.
- Preisach modeling.
- Vector hysteresis modeling.

- Hysteresis experiments and measurements.
- Barkhausen noise, disorder, chaotic behavior.
- Nonmagnetic hysteresis.
- Classical spin models, random-field models, domain wall models, etc.
- Dynamic hysteresis, thermal relaxation, aftereffects.
- Micromagnetics, theory.
- Micromagnetics, numerical techniques, field calculations, standard problems.
- Micromagnetics, applications, hysteresis properties of nanoparticles,
- spin dynamics of coherent structures, etc.

Abstract Book

Authors are invited to send 2 pages short contribution to the Abstract Book. After reviewing, the accepted papers will be presented in oral and poster sessions at the Symposium. The full version of the papers after second review will be published in *Physica B*.

Important dates

- ***Submission of Abstracts, January 10, 2005.***
- ***Notification of acceptance, February 10, 2005.***
- ***Pre-registration and hotel reservation, till March 30, 2005.***
- ***Submission of full papers, May 30, 2005.***
- ***Symposium, 30 May --1 June 2005***

Preisach Memorial Book

As the 5th International Symposium on Hysteresis and Micromagnetics Modeling (HMM-2005) will be devoted to the memory of the 100 year anniversary of the birth of Ferenc Preisach, whose hysteresis model is bearing his name, on this occasion a memorial volume on the Preisach model and its different modifications will be published, where researchers, working in the field of Preisach models are cordially invited to submit manuscripts.. After a peer review process the papers will be published in Preisach memorial book.

Correspondence

Co-Chair, **Dr. Amalia Ivanyi**

Executive Secretary, **Mr. Miklos Kuczmann**

Technical Secretary, **Mr. Peter Kis**

Department of Broadband Infocommunication and Electromagnetic Theory

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E-mail: secretariat@hmm2005.bme.hu

<http://www.HMM2005.bme.hu>

Conference announcement 3



First Call for papers

The conference “**Moscow International Symposium on Magnetism**” (MISM) was held in Moscow State University in 2000 and 2002. Last time more than 400 scientists from USA, Canada, Great Britain, France, Germany, Spain, The Netherlands, Brazil, Poland, Turkey, Czech, Japan, Korea, Russia and Former Soviet Republics participated in MISM-2002. Proceedings of MISM-2002 were published in Journal of Magnetism and Magnetic Materials, vol.258-259, 2003. Taking into account the success of these meetings and numerous requests of participants the International Advisory Committee decided to organize MISM on regular basis, every three years. The MISM is the largest international conference on magnetism, which takes place in Russia. This time the Organizing Committee decided to focus on the most actual topics of modern magnetism and to strictly limit the total number of participants. Besides of plenary talks of tutorial character and invited talks of leading scientists the only original and top-level contributions will be considered by the Program Committee. The Organizers have very restricted funding and cannot support participants, including the members of International Advisory Committee, plenary and invited speakers but we will try to do our best to arrange useful, pleasant and not expensive stay in Moscow.

MAIN TOPICS

1. Magnetotransport and Spintronics
2. High Frequency Properties
3. Magnetophotonics (linear and nonlinear magneto-optics, magnetophotonic crystals)
4. Magnetic Semiconductors
5. Metamaterials
6. Magnetic Nanostructures and Low Dimensional Magnetism
7. Magnetic Soft Matter (magnetic polymers, complex magnetic fluids and suspensions)
8. New Magnetic Materials
9. Biomagnetism
10. Miscellaneous

IMPORTANT DATES in 2005

Deadline for registration March 15
Deadline for submission of abstracts March 15
Deadline for submission of visa application April 1
Deadline for submission of manuscripts May 5
MISM starts June 25

Conference Office and Address:

Alexander Granovsky, Nikolai Perov, Anna Radkovskaya:

MISM, Magnetism Department,

Faculty of Physics M.V. Lomonosov Moscow State University, Moscow

119992, Russia

phone/fax: +7 095 939-4787

e-mail: mism@magn.ru

URL: <http://mism.magn.ru>

Conference announcement 4

16th Magnetic Recording Conference

TMRC 2005

August 15-17, 2005

Stanford University, Stanford, California, USA

TMRC 2005 will focus on **magnetic recording heads and systems**. About thirty-six invited papers of the highest quality will be presented orally and subsequently published in the IEEE Transactions on Magnetics. The topics to be presented include:

- Advanced Read Heads (CPP and CIP)
- Perpendicular Recording Technology
- Slider Fabrication Technology
- Head Disk Interface and Head Reliability
- Recording System and Channel Integration
- Preamps, Interconnects, Microactuation

Nominations for speakers should be directed to the Program Chairs, preferably by e-mail, before February 19, 2005. Please contact Dr. Hasegawa for heads, and Dr. Barndt for systems related topics, respectively. Poster sessions will have contributed posters in addition to those given by the invited speakers. Poster contributors must send a one page abstract to the Posters Chair by July 15, 2005 for selection purposes. The full program booklet of TMRC 2005 will be available in May 2005.

Conference Chairman Dr. Harry Gill Harry.gill@htihachigst.com

Program Co-chairmen

Dr. Naoya Hasegawa hasegawa@alps.co.jp,

Dr. Rick Barndt Rick_barndt@Maxtor.com

Local Chairman Prof. Shan Wang sxwang@ee.stanford.edu

Publications Chairman Dr. Sining Mao Sining.mao@seagate.com

Publicity Chairman Dr. Moris Dovek Moris.dovek@headway.com

Treasurer Dr. Joost Mortelmans mortelma@stanfordalumni.org

Poster Chairman Dr. Sharat Batra sharat_batra@seagate.com

Current information on TMRC 2005 can be found at

<http://tmrc.nanointernational.org>

Conference announcement 5



ICST 2005 is intended to provide a common forum for researchers, scientists, engineers and practitioners throughout the world to present their latest research findings, ideas, developments and applications in the area of sensing technology. ICST 2005 will include keynote addresses by eminent scientists as well as special, regular and poster sessions. All papers will be **peer** reviewed on the basis of a full length manuscript and acceptance will be based on quality, originality and relevance. The review process will be **double blind** and author details will not be divulged to the reviewers. Accepted papers will be published in the conference proceedings.

Topics will include, but are not limited to, the following:

- Vision Sensing
- Sensors Signal Processing
- Sensors and Actuators
- Sensors Phenomena and Modelling
- Sensors Characterization
- Smart Sensors and Sensor Fusion
- Electromagnetics Sensors
- Chemical and Gas Sensors
- Physical Sensors
- Electronic Nose Technology
- Biological Sensors
- Electro-optic Sensors and Systems
- Mechanical sensors (inertial, pressure, and tactile)
- Nano Sensors
- Acoustic, Noise and Vibration Sensors
- Wireless Sensors
- Optical Sensors (radiation sensors, optoelectronic/photonic sensors, and fibres)
- Lab-on chip
- Sensor Arrays
- Intelligent sensing
- Telemetry
- Online monitoring
- Applications of Sensors (automotive, medical, environmental monitoring, consumer, alarm and security, military, nautical, aeronautical and space sensor systems, robotics, and automation)
- Solid State Sensors
- Internet-based and other Remote Data Acquisition

Paper Submission

Authors are invited to submit the full manuscript (4 to 6 pages including references) of their technical paper, for oral or poster presentation, in **MS Word format** using web (<http://icst.massey.ac.nz/>)

For further details, please **contact**: Subhas Mukhopadhyay
S.C.Mukhopadhyay@massey.ac.nz

Conference announcement 6

Seventh Latin-American Workshop on Magnetism Magnetic Materials and their Applications (LAW3M05)

Reñaca (Chile) December 11-15, 2005

<http://www.law3m.cl>

Description: Latin-American Workshops on Magnetism, Magnetic Materials and their Applications are held every two years in different Latin-American countries and open to participants from all over the world. Sessions include: invited talks, oral contributions, poster contributions, advanced topic discussions, round table on collaborations and others. Working language is English. Proceedings will be published as a special but consecutive number of Physica B.

Main topics:

- Cooperative phenomena in magnetism
- Artificially structured materials
- Spintronics: spin injection and detection
- Magnetic nanostructures
- Transition metal oxides
- Magnetic multilayers
- Low-dimensional magnetism
- Spin glasses and frustrated systems
- Giant and colossal magnetoresistance
- Molecular and cluster magnetism
- Computer simulations of magnetic systems
- Applications and interdisciplinary topics

Deadlines:

November 2004	Second Announcement
March 2005	Third Announcement and Call for papers
31 July 2005	Abstracts, pre-registration and beginning of hotel reservation.
31 August 2005	Announcement of abstract acceptance
30 September 2005	Deadline for discount registration fee
31 October 2005	Full paper reception for the Proceedings (to be published in Physica B)
11 December 2005	Venue at hotel Conference Town, Reñaca and beginning of LAW3M-05 (www.ctown.cl) There is no deadline for hotel registration but it will be handled on the basis of "first come first served".

Registration:

Regular	US\$ 300.-
Discount fee	US\$ 250.- (if paid before September 30, 2005)
Student	US\$ 150.-

IEEE Publication news

Members who would like to volunteer their services as technical reviewers are needed. Society members with **ideas for new books** or candidates for the **Classic Re-Issue** series are urged to get in touch with:

John T. Scott,
Magnetics Society Liaison to IEEE Press
 E-mail: john.scott@physics.org

For **Classic Re-Issues**, the contact is
 Stan Charap charap@ece.cmu.edu

For **new books in data storage**, the contact is
 "Gordon F. Hughes" gfhughes@ucsd.edu

For **new books in other areas**, the contact is
 John T. Scott john.scott@physics.org

IEEE TRANSACTIONS ON MAGNETICS

IEEE XPLORE(R) RELEASE 1.5:

The IEEE Xplore(R) Release 1.5 provides free abstract/citation records for guests and enhanced linking to complete abstract/citation records for IEEE members and subscribers, as well as:

- ▶ Title history for related journals and magazines
- ▶ Ask *IEEE link for referenced articles not in IEEE Xplore
- ▶ Google to index IEEE abstracts, enabling searches to locate IEEE content directly from a Google web search
- ▶ Thomson ISI now includes links from their Web of Science products directly to articles in IEEE Xplore(R).

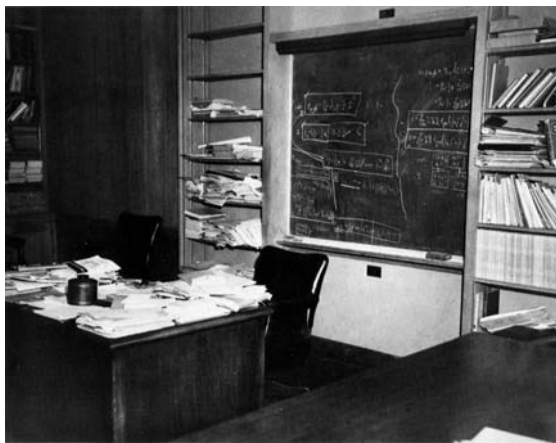
In addition, through IEEE Xplore 1.5, subscribers to the IEEE Member Digital Library can now sort information in their personal file cabinets by publication name, primary author and original filing date.

For more information on this release, visit
<http://ieeexplore.ieee.org/xpl/ReleaseNotes.jsp>

Starting in 1965 with *vol. 1*, now all papers published in **IEEE TRANSACTIONS ON MAGNETICS** are available at **IEEE Xplore**, as well as the searchable **Cumulative Index 1985-2000, Volumes 21-36**

Ron Goldfarb
Publications Chair
r.goldfarb@ieee.org

QUIZ – Solution



The oldest picture of Albert Einstein
and his last blackboard

http://www.th.physik.uni-frankfurt.de/%7Ejr/gif/phys/einst_4.jpg
http://www.th.physik.uni-frankfurt.de/%7Ejr/gif/phys/einst_bb.jpg

2005 is the World Year of Physics

In 1905, Einstein wrote three papers (on light quanta, Brownian motion and the special theory of relativity), which would change the way we looked at physics. Given his iconic status in modern physics, the U.S. decided on “Einstein in the 21st Century” as its theme for the **World Year of Physics 2005**—the hundredth anniversary of those papers.

<http://www.physics2005.org/einstein.html>
