IEEE MAGNETICS NEWSLETTER

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Editor: Jia Yan Law

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CALL FOR CHIEF EDITOR

of IEEE Magnetics Letters

THE RISE OF ARTIFICIAL INTELLIGENCE

THE WRITE STUFF:

Write Literally

Newsletter Editorial Board

Jia Yan Law (Editor)

Jia Yan currently holds a tenure-track Emergia fellowship at University of Seville, Spain. Her research interests include functional high-entropy alloys, magnetocalorics, magnetic materials, and additive manufacturing. She has been an IEEE Senior Member and Editor of the IEEE Magnetics Society Newsletter since 2022.

Martin Lonsky (Associate Editor)

Martin currently works as a research scientist at the Institute of Physics of the Goethe University Frankfurt (Germany). His interests lie in experimental condensed matter physics, magnetism, and spintronics. Aside from experimental techniques, he is also interested in computational methods and how to incorporate them into undergraduate science and engineering curricula. In addition, Martin enjoys writing and communicating science. He is a member of the IEEE Magnetics Society since 2020.

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Call for Chief Editor

of IEEE Magnetics Letters

by Tom Thomson
Publications Committee Chair

In accordance with the Magnetics Society procedures, we are soliciting applications for the position of Chief Editor of the *IEEE Magnetics Letters*. *IEEE Magnetics Letters* is a peer-reviewed, archival journal covering the physics and engineering of magnetism, magnetic materials, applied magnetics, design and application of magnetic devices, bio-magnetics, magneto-electronics, and spin electronics. *IEEE Magnetics Letters* publishes short, scholarly articles of substantial current interest. *IEEE Magnetics Letters* is a hybrid Open Access (OA) journal. For a fee, authors have the option making their articles freely available to all, including non-subscribers. OA articles are identified as Open Access.

The Chief Editor will start a two-year appointment in January 2024 which is renewable for up to two re-appointments giving a total of 6 possible years. The qualified candidate is expected to have a doctorate in engineering, physics, materials sciences, or a related area; at least five years of editorial experience; broad interest across the full spectrum of magnetism and magnetic materials and devices; an established network in the magnetics community; and project-management skills.

The Chief Editor manages the operations of the journal with the help of an editorial assistant, recruits editors, associate editors and members of the editorial review board, examines incoming manuscripts for originality and scope, assigns them to associate editors to manage the reviews which are undertaken speedily by the editorial review board. The Chief Editor shapes and leads the journal and will be responsible (together with editors and the publication committee chair) for the strategic development of the journal. It is an unpaid, volunteer position.

To apply, please submit your brief resume and a letter outlining your qualifications and position statement to me at

thomas.thomson@manchester.ac.uk.

Applications will be considered until

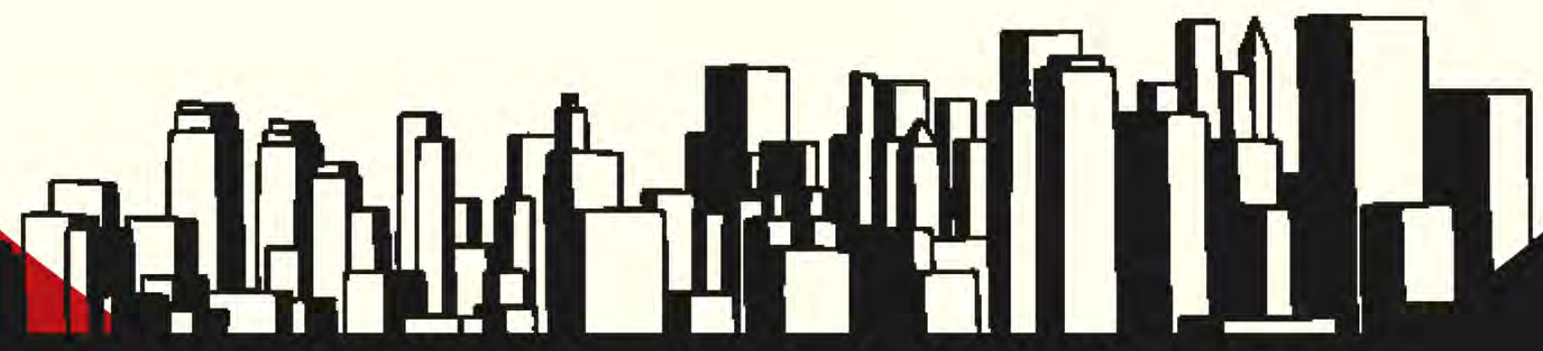
October 20, 2023.

The appointment will be subject to approval by the Magnetics Society Administrative Committee.

From the President

Welcome to the September issue of our newsletter. Seeing many of you at the Intermag conference in Sendai in May was great. Almost 1,500 on-site participants, in addition to another almost 300 online registrants, attended the Intermag. I saw many people enjoy networking in the poster hall. This clearly indicates the Society has recovered from the Covid-19 pandemic.

I would like to congratulate and thank the Conference Co-Chairs, Koki Takanashi and Beth Stadler, and their team. You can find out more information in their report in this issue of the newsletter.



IEEE MAGNETICS

At the beginning of my term, I promised to work on four priorities: (1) broader memberships; (2) more collaborations with our sister societies; (3) greater industrial involvement; and (4) database creation. I would like to give you an update on how things are currently progressing.

We have recovered successfully from the pandemic and now we need to convert this robust conference participation into memberships.

In order to provide membership benefits and attract new members, Intermag continues to organize events, such as Women in Magnetism, Young Professionals, and Students in Magnetism. Each event attracted 50–100 participants. They offered mentoring opportunities for those at different career stages, a competition of 3-minute flash presentations, and a challenge on magnetic building skills. In addition, we organized an Administrative Committee (AdCom) networking event, followed by our Annual General Meeting at Intermag. The attendees overwhelmingly favored this new format. We will continue to organize them at the coming MMM and look forward to seeing you in Dallas, Texas in USA.

For item (2), the Sister Society Coordinator, Min-Fu Hsieh, organized a lunch meeting during Intermag. There were representatives from the Magnetics Society of Japan, the Korean Magnetics Society, the Taiwan Association for Magnetic Technology, the European Magnetism Association, and the Spanish Club of Magnetism. We had a very fruitful discussion about coordinating our conferences (and possible future joint events) and continuing our dialogue.

For (3) industrial involvement, Intermag attracted 1 Platinum, 1 Gold, and 5 Silver sponsors, as well as 31 exhibitors. I believe you enjoyed talking to them in Sendai and received much positive feedback from them.

Sponsors and exhibitors particularly enjoyed talking to local high school students, who were invited by the conference organizers. The students were in a government-initiative program called “Super Science Highschool”.

They also requested that we consider organizing a session dedicated to industrial presentations, which may be arranged at the next Intermag in Rio de Janeiro, Brazil. At Intermag 2023, laboratory visits were also organized to Sony, NanoTerasu, and Tohoku University. I heard from those who attended that they really had an excellent time and learned about cutting-edge research.

For the last item, Rie Umetsu, who was a Program Co-Chair of the 2022 Joint MMM-Intermag in New Orleans, is in charge of creating a database to share all the statistics and key documents from past conferences. These can be accessed by current and future Conference Chairs and their teams to allow for better planning.

The AdCom meeting was held online on Thursday after Intermag. Traditionally, the AdCom meeting took place during the conference;

but it was replaced by the aforementioned networking event so that the AdCom members could spend more time attending sessions and discussing with their collaborators and colleagues.

We approved additional financial support for our Summer School to ensure that ~80% of travel costs would be covered and support for small conferences to meet the increasing requests for financial support from the Society.

Over the past months, the Committee Chairs have been meeting online on the first Friday of every month. Informally, we discuss various topics related to the Society and we welcome your idea and/or suggestions. Please do not hesitate to contact us.

In addition to our flagship Intermag conference, our other major activity, the Magnetics Society Summer School, was held June 11–16 in Carovigno and Bari, Italy; 94 students attended the School. The Society funded 72 students partially and fully. In addition, 15 students from USA had their local expenses covered by the National Science Foundation (NSF), and 20 students were fully supported by their supervisors or on their own. The venue was a beach resort with a full board (including infinite drinks!), which was received extremely well by the participants.

I would like to congratulate and thank the local organizers, Vito Puliafito and Giovanni Finocchio, and the Education Committee Chair, Hyunsoo Yang.

See the report on MagSoc Summer School 2023

Other good news for us is the increase in the impact factor of IEEE Transactions on Magnetics from 1.848 to 2.1. Congratulations to the current and previous Editors-in-Chief, Amr Adly and Pavel Kabos, and their teams as well as the Publications Committee! This will help us to disseminate our work to the community and beyond.

Between June 14 and 17, I attended the IEEE TAB (Technical Activities Board) meeting in Chicago. I am pleased to announce that our motion to continue nonpolitical support for Magnetism in Ukraine was approved. I would like to thank the Finance Chair, Mark Kief, the Education Committee Chair, Hyunsoo Yang, and the committee members for their continuous efforts. We will keep you updated on the progress.

Between June 19 and 22, the Conference Executive Committee (CEC) went on site visits for Intermag 2026, which will be held in Europe. Manchester and San Sebastian are the candidates. The CEC will discuss the details and will decide on the venue by the coming CEC meeting during the MMM 2023.

I am grateful to report the following conferences have been approved to be supported by the Society. Please consider attending them.

Spin Electronic and Nanomagnetism Colloquium (SPIN) 2023

August 30 – September 2, 2023
C.C.J. Meurthe et Moselle, Nancy, France,
(financially supported)

Front Range Advanced Magnetics Symposium (FRAMS) 2023

September 16, 2023,
University of Denver, Denver, CO, USA
(financially supported)

SPIN ASIA 2023

September 24-29, 2023
Chiang Mai, Thailand,
(financially supported)

IEEE Magnetics Society School (IMagsoc School) 2023

October 17–20, 2023,
King Mongkut's Institute of Technology, Ladkrabang (KMITL), Ladkrabang, Thailand
(financially supported)

As I mentioned in the last newsletter, the IEEE plans to review our activities this year. We will review the document with the current Society leaders and will ask for some input from the previous Society leaders based on their experience.

As always, please visit our Society's website to learn more about our activities. You can find the contact details of the officers, committee chairs, and AdCom members. We welcome any comments and suggestions you may have. Your thoughts and feedback are more than valuable for the future of the IEEE Magnetics Society.

Please circulate the website address to your colleagues who are interested in setting up a new chapter or volunteering.

Atsufumi Hirohata can be contacted via email: atsufumi.hirohata@york.ac.uk

IEEE MAGNETICS

AIP Publishing

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MMM 2023

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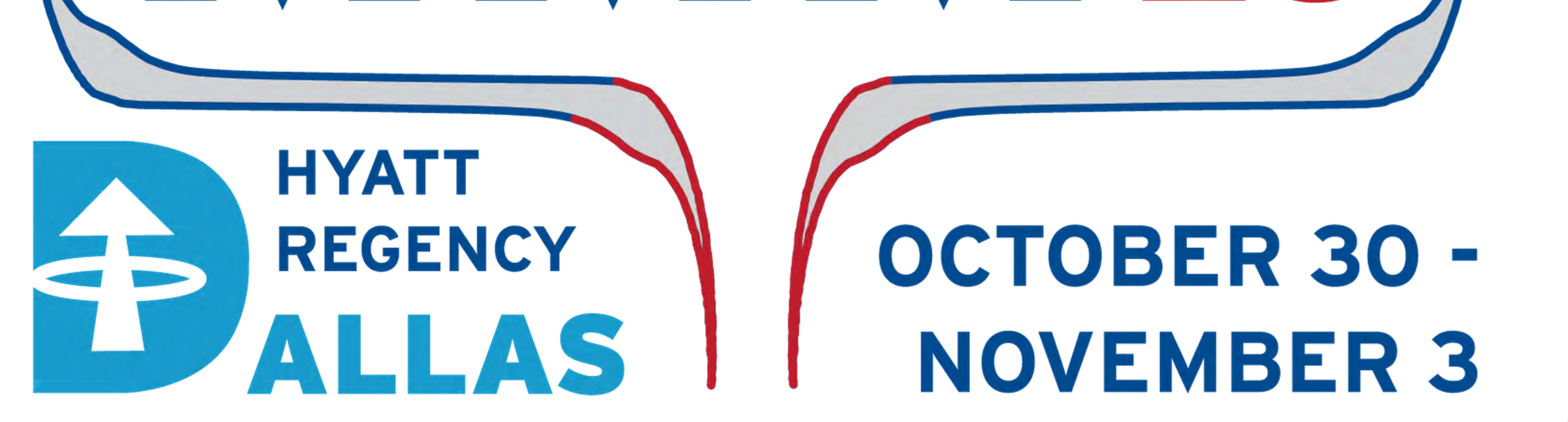


www.magnetism.org

Intermag 2023 Report

by Koki Takanashi and Beth Stadler
General Co-Chairs, Intermag 2023 Conference

It was our great pleasure to serve as the General Co-Chairs for the International Magnetics (Intermag) Conference 2023, jointly sponsored by the IEEE Magnetics Society and the Magnetics Society of Japan (MSJ). The conference consisted of onsite and online parts, with the onsite location at the Sendai International Center, Sendai, Japan, on May 15-19.

Over 1,100 onsite presentations were given in Sendai, reaching about 80 % of total presentations. In total, 10 rooms were used for 78 oral sessions, and the Exhibition Hall held 44 poster sessions. Nearly 1,500 people attended the conference in person, including 30 % Japanese participants. The numbers of both onsite attendees and onsite presentations reached levels similar to those before the COVID-19 pandemic, indicating a complete recovery.

We would like to express our sincere thanks to the Management Committee and Secretariat (PCO: Congrés Inc.), as well as Regina Mohr and Molly Bartkowski from Simply Vintage for their great efforts in enabling the conference to succeed.

Intermag 2023 General Co-Chairs, Koki Takanashi (left) and Beth Stadler (right) Beth gave Koki a gift.

Sendai, home of Tohoku University, has a long history in magnetism and magnetics research. Now, a new synchrotron radiation facility called “Nano Terasu” has just been constructed, and it will be up and ready for use next year. At the plenary session on May 17, welcome addresses were given by General Co-Chair Takanashi, IEEE MagSoc President and MSJ President, then the IEEE Award Ceremony was followed by a plenary lecture about “Nano Terasu” given by Masaki Takata, Professor of Tohoku University and the President of Photon Science Innovation Center.

Attendance was excellent at Intermag conference events such as Meet the Experts, Women in Magnetism, Writing Workshop, Young Career Lightning Talks, Students in Magnetism, and also technical sessions: Magnetism for Tomorrow’s Chips, Magnetism in Underground Mineral Resources, and Magnetic Energy Conversion. Several local special events were conducted before, after and during the conference, including a Public Lecture, Factory Visit and Lab Tour in Magnetism.

Sendai-city organized a unique event on the evening of May 16 at “Ryokusaikan”, a new pavilion near the conference venue, where the participants enjoyed a projection mapping describing the history of Sendai with Japanese kimonos to try on.

See the report on Students in Magnetism at Intermag 2023 Conference

See the report on Magnetism in Underground Mineral Resources

See the report on Lab Tour in Magnetism

More than 1,000 people joined the Banquet on May 17. It has been a long time to see so many magnetics colleagues gathering together in one place, and the view was spectacular! The Banquet started with a welcome address by Hideo Ohno, President of Tohoku University, followed by a video message from Kazuko Kohri, Mayor of Sendai. General Co-Chair Stadler proposed a toast, and then the participants enjoyed talking with plenty of food and drinks.

For funding, we had 1 Platinum, 1 Gold, and 5 Silver sponsors, and 31 exhibitions. The total amount of sponsored funds exceeded the average of previous conferences, and we thank all the sponsors for their support.

The combined format consisting of onsite and online parts had/has merits and demerits. The onsite part was important for in-person attendees to communicate directly. Even if attendees missed some talks, they could hear pre-recorded on-demand content afterward. It is very convenient. On the other hand, it is a heavy task for ProCom members to make two programs: onsite and online. Furthermore, pre-recordings were not a favored format for attendees. We hope that these demerits will be improved in future conferences.

The online part of Intermag 2023 Conference continued till August 18.

We look forward to seeing you at future conferences, MMM2023 Conference in Dallas, TX, Intermag 2024 Conference in Rio de Janeiro, Brazil, and beyond.

Sincerely yours,
Koki Takanashi & Bethanie Stadler

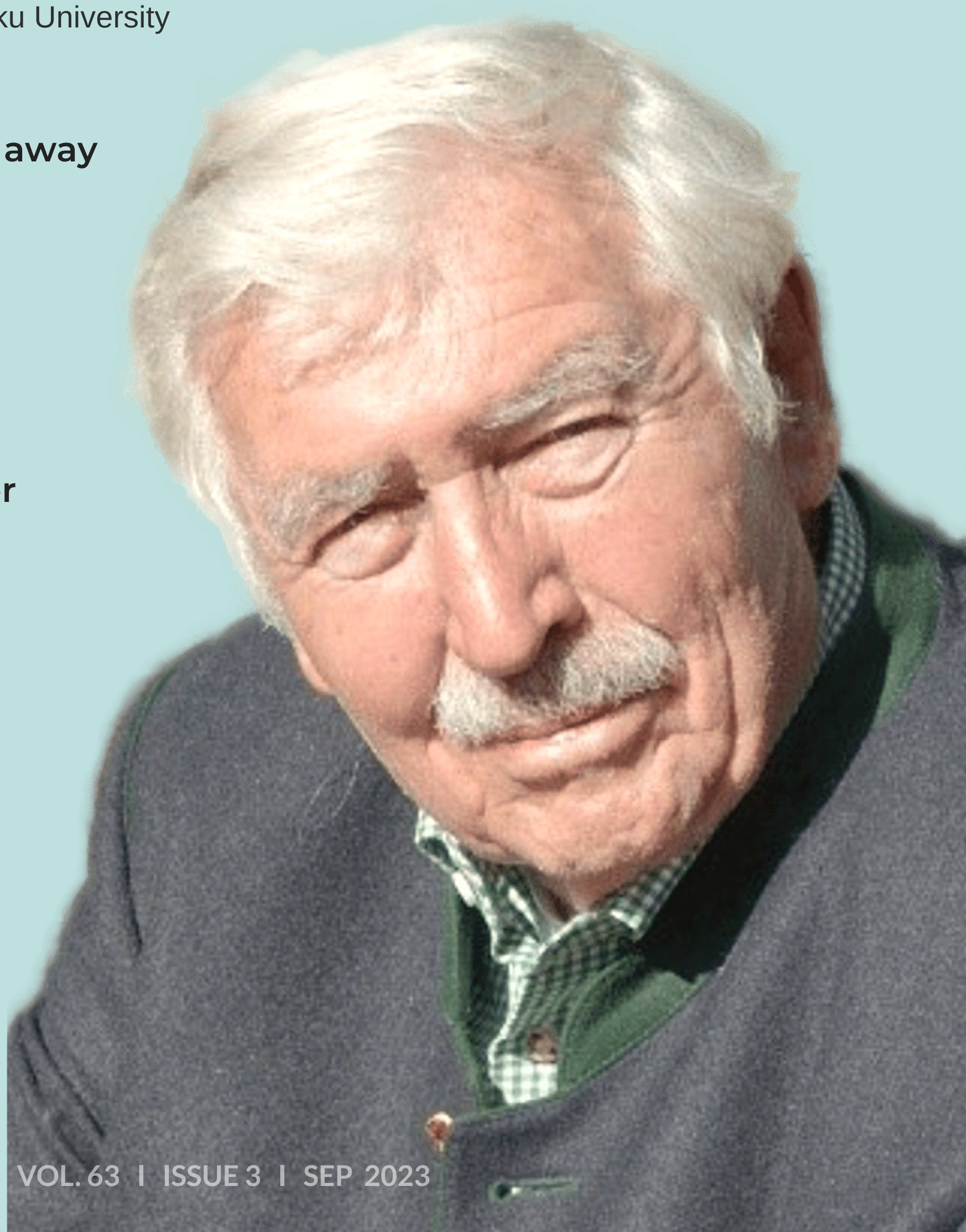
Intermag 2023 Conference
General Cochairs

In Memoriam

Horst Hoffmann (1932–2022)

by Gunter Bayreuther (Prof. Dr. Universität Regensburg)
and Terunobu Miyazaki (Emeritus Prof. Tohoku University

Professor Horst Hoffmann passed away on May 28, 2022 at the age of 89. Professor Hoffmann played a decisive role in the establishment and organization of the Faculty of Physics at the University of Regensburg (Germany), which is now one of the major centers for magnetism/spintronics research in Europe. For more than 30 years he gave a strong impetus to generations of students and young scientists in their professional lives and helped many of them to start of their careers through his wide range of contacts in academia and industry.



Born 1932 in Breslau (today Wroclaw in Poland) Horst Hoffmann later lived in Bremen in Northern Germany where he obtained his high-school diploma in 1952. After studying physics and mathematics at the universities of Tübingen and Munich he obtained his physics diploma from the Technical University of Munich in 1959. This was followed in 1961 by his Ph.D. entitled “Saturation magnetization and anisotropy field of thin iron films,” which provided a contribution to the long-lasting controversy as to whether films thinner than about 5 nm can be ferromagnetic at all. Four years later, in 1965, he received his habilitation. In 1970 he was appointed as a full professor of experimental physics at the Faculty of Physics of the University of Regensburg, a position which he held until his retirement in 2001.

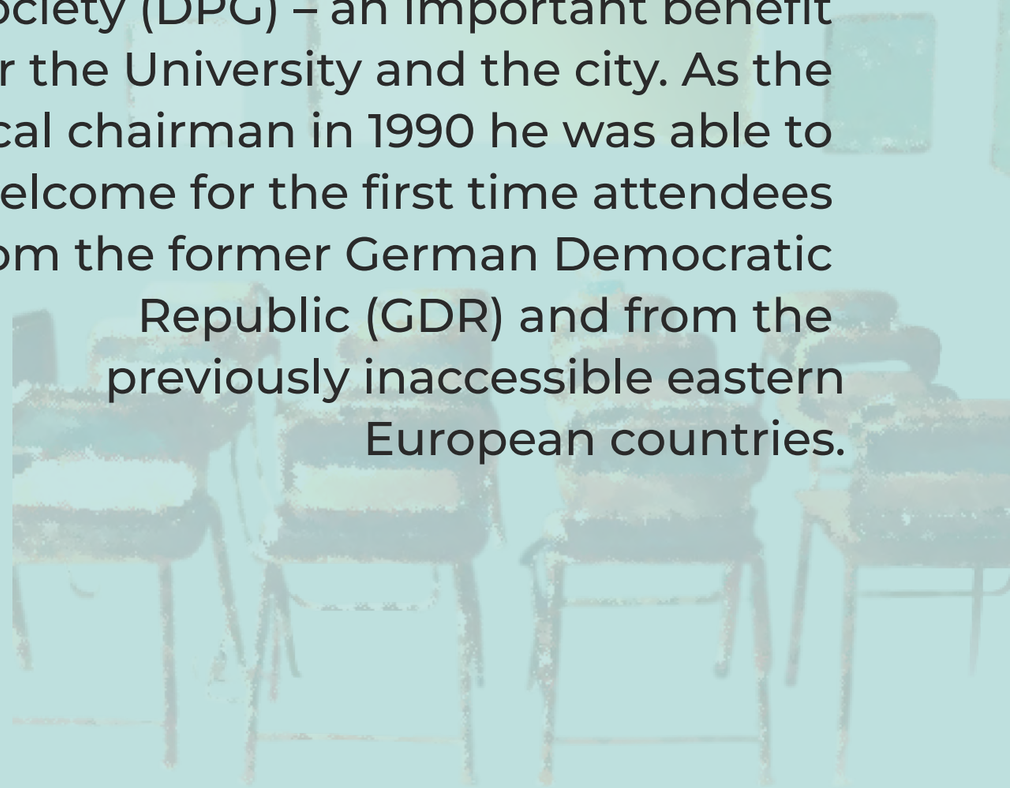
“Saturation magnetization and anisotropy field of thin iron films,”

which provided a contribution to the long-lasting controversy as to whether films thinner than about 5 nm can be ferromagnetic at all

He established Regensburg as one of three alternating venues (along with Berlin and Dresden) of the largest physics meeting in Europe, the annual Condensed Matter Conference of the German Physical Society (DPG)

– an important benefit for the University and the city.

Horst Hoffmann was one of the pioneers in setting up the physics teaching program in Regensburg as well as providing a sound financial basis for the physics department. His long-term chairmanship of the University’s IT committee led to the first campus-wide computer network in Germany joining numerous laboratory computers with a host (main frame) in the computer center. He established Regensburg as one of three alternating venues (along with Berlin and Dresden) of the largest physics meeting in Europe, the annual Condensed Matter Conference of the German Physical Society (DPG) – an important benefit for the University and the city. As the local chairman in 1990 he was able to welcome for the first time attendees from the former German Democratic Republic (GDR) and from the previously inaccessible eastern European countries.



Over the years Horst Hoffmann oversaw the development of his institute in a systematic way. Starting from micromagnetism in ferromagnetic films, based on his well-known *ripple theory*, the research topics expanded to the magnetism of two-dimensional systems, to novel materials and to a variety of magnetic, electronic and optical properties of thin films. A key component of this strategy was the steady development of infrastructure for the preparation and comprehensive characterization of thin films down to the atomic scale. Details of this process are outlined in the book “50 Years of Physics at the University of Regensburg” (Universitätsverlag Regensburg, 2020 [1].

he established close links to vacuum Societies in other countries

In conjunction with the French vacuum society (Société Française du Vide) a series of international conferences was established: “Trends and New Applications in Thin Films – TATF”. In 2001, the first honorary membership of the German Vacuum Society was awarded to Horst Hoffmann.

The success of these scientific endeavors led to a growing international reputation of Horst Hoffmann’s institute as a center of thin film physics which attracted numerous guest scientists from many countries including USA, Japan, China, USSR, Romania, Poland and others. In turn, he received invitations as a visiting professor at Imperial College (London), MIT, Caltech, Tohoku and Nagoya Universities. This international reputation led to Horst Hoffmann serving as a chairman of the Thin Film Division of the German Physical Society for over six years. As the chairman of the “German Working Group Vacuum” after the reunification of Germany in 1990 he devoted himself to the fusion with the National Vacuum Commission of the former GDR. As the first president of the new German Vacuum Society he established close links to vacuum Societies in other countries. In conjunction with the French vacuum society (Société Française du Vide) a series of international conferences was established: “Trends and New Applications in Thin Films – TATF”. In 2001, the first honorary membership of the German Vacuum Society was awarded to Horst Hoffmann.

[1] www.univerlag-regensburg.de; ISBN: 978-3-86845-162-7; (book in German)

Horst Hoffmann was leader in European magnetism where, in 1984, he was one of the initiators of a network of 23 academic and industrial research entities from six EU countries formed to promote magnetic data storage technologies within a "Community Action on Magnetic Storage Technology – CAMST" which was funded by the European Commission for 12 years. Horst Hoffmann was its chairman from 1984 to 1992. In 1975 the most important international conference on magnetic films and surfaces "ICMFS – International Colloquium on Magnetic Films and Surfaces" took place in Regensburg (following London, Cambridge, Prague, Tokyo, San Francisco etc.) with Horst Hoffmann as the chairman. He also served as the chairman of the corresponding International Organizing Committee from 1985 to 1991.

Generations of young scientists supervised by Horst Hoffmann over more than 31 years have positive memories of their time at his institute.

This could be seen in the response to an invitation in September 2018 where more than 160 past students and postdocs gathered at the Adlersberg, a historic beer garden close to Regensburg, to celebrate a reunion party together with Horst Hoffmann.

It is to be regretted that a follow-up meeting, scheduled for September 2023, will have to happen without his personal presence.

In Memory of

DENIS MEE

(1927 - 2023)

by
Tom Arnoldussen,
Chris Bajorek,
Barry Schechtman,
Roger Wood

Charles Denis Mee passed away on May 22nd, 2023 at the age of 95, in Saratoga, California. Much of his long and distinguished career was at IBM. He is noted for his contributions to and leadership in Magnetic Recording Technology as well as being responsible for several very comprehensive books on the topic.

Denis was born in Loughborough, England in 1927. He received a B.Sc. from London University and a Ph.D. and D.Sc. from Nottingham University. He worked at the M.S.S. Recording Company, in Slough from 1951 until 1957 whereupon he emigrated and joined CBS Laboratories in Stamford, Connecticut. Denis became Technical Director of the Magnetics Group at CBS and received an award from the IRE for his work on a precursor to the consumer audio cassette tape.

he obtained a key patent that proved very valuable in protecting IBMs subsequent development of thin-film heads.

In 1962, Denis joined IBM Research at Yorktown Heights before transferring to the Advanced Technology group in San Jose, California. In 1972 he obtained a key patent that proved very valuable in protecting IBMs subsequent development of thin-film heads. Denis went on to lead and contribute to a number of novel technology programs at IBM covering both magnetic and optical data-storage. In 1982 Denis was a co-founder and first director of IBM's Magnetic Recording Institute, one of of 19 joint programs between Research and Development that IBM established. He was fortunate in being able to recruit many of the leading scientists and engineers from the abandoned magnetic bubbles program. He received corporate awards for his work at IBM and was appointed an IBM Fellow in 1983.

he was co-founder and first chairman of the board of the National Storage Industry Consortium (later, Information Storage Industry Consortium, INSIC) founded to enhance industry competitiveness through cooperation between universities and industry.

Denis' vision for the storage industry was always to ensure that sound and relevant research was being conducted and that a viable path existed for its adoption into real-world products. In the early 1980s, Denis led IBM's efforts to establish university research centers in magnetic and optical storage. These included the Center for Magnetic Recording Research (CMRR) at UC San Diego and the Data Storage Systems Center (DSSC) at Carnegie Mellon University. Both institutions still thrive and over several decades now the industry has gained many important research insights and a multitude of high-caliber students already familiar with the technology. In the same vein, in 1991, he was co-founder and first chairman of the board of the National Storage Industry Consortium (later, Information Storage Industry Consortium, INSIC) founded to enhance industry competitiveness through cooperation between universities and industry.

Denis fully recognized the importance of education and of making accessible a full understanding of the technology. In 1964, he published "The Physics of Magnetic Recording", one of the earliest books on the topic. In the 1980s, a collaboration with Eric Daniel resulted in a massive three-volume compilation: "Magnetic Recording: I) Technology; II) Computer Data Storage; III) Video, Audio & Instrumentation". This work was subsequently abridged and updated to become the "Magnetic Recording Handbook". In 1998, the long history of the technology was summarized in "Magnetic Recording: The First 100 Years", edited with Eric Daniel and Mark Clark.

In 1970, Denis was elevated to IEEE Fellow. In 1994, he received the IEEE Reynold B. Johnson Information Storage Systems Award "for contributions to the design of optical, magneto-optical, and magnetic recording files". In 1996, he became a member of the National Academy of Engineering for "contributions to magnetic storage and the development of thin-film heads". In 2000, he received the IEEE Magnetics Society Achievement Award for "his technical accomplishments and his services to the magnetics community".

Denis formally retired from IBM in 1993 but continued as a consultant on the joint industry-university data storage programs. He was also one of the founding members of and major contributor to the Storage Special Interest Group at the Computer History Museum, Mountain View, California.

Although Denis emigrated as a young man and had a long and illustrious career in America, he remained forever the consummate English gentleman. His quiet courteous manner and sage advice gave him an outsize influence in shaping many of our careers. He will be sincerely missed.

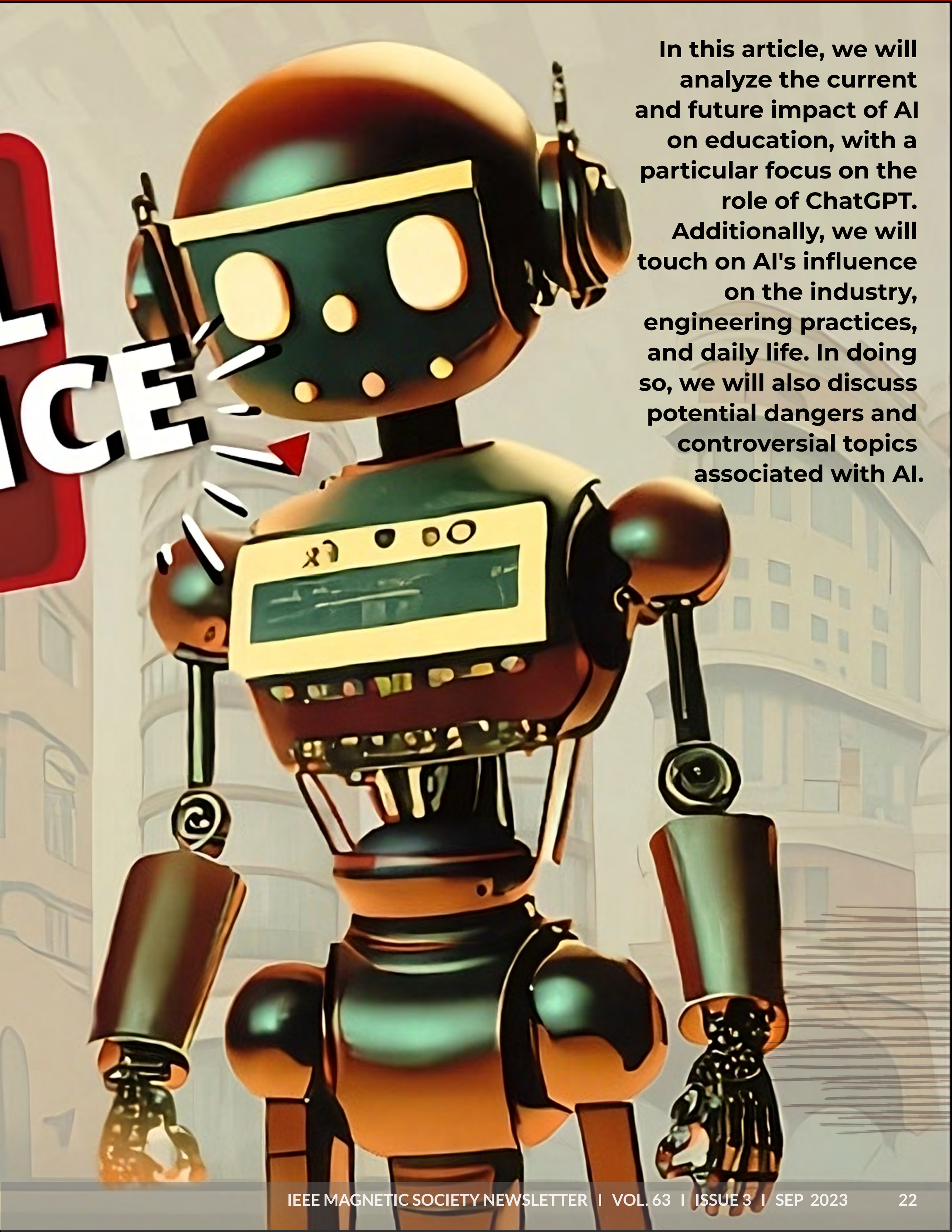
Denis was predeceased by his childhood sweetheart, Molly, whom he married in 1951. He is survived by his son, Robert, and three grandsons.

THE RISE OF ARTIFICIAL INTELLIGENCE

Transforming Education, Industry, and Daily Life

by
Martin Lonsky
Institute of Physics, Goethe University Frankfurt, Germany

Artificial Intelligence (AI) has emerged as a game-changer in various fields, revolutionizing our lives, learning, and work. In the context of science and technology education, AI has opened up new frontiers, empowering both educators and learners to explore complex problems, develop innovative solutions, and shape the future.

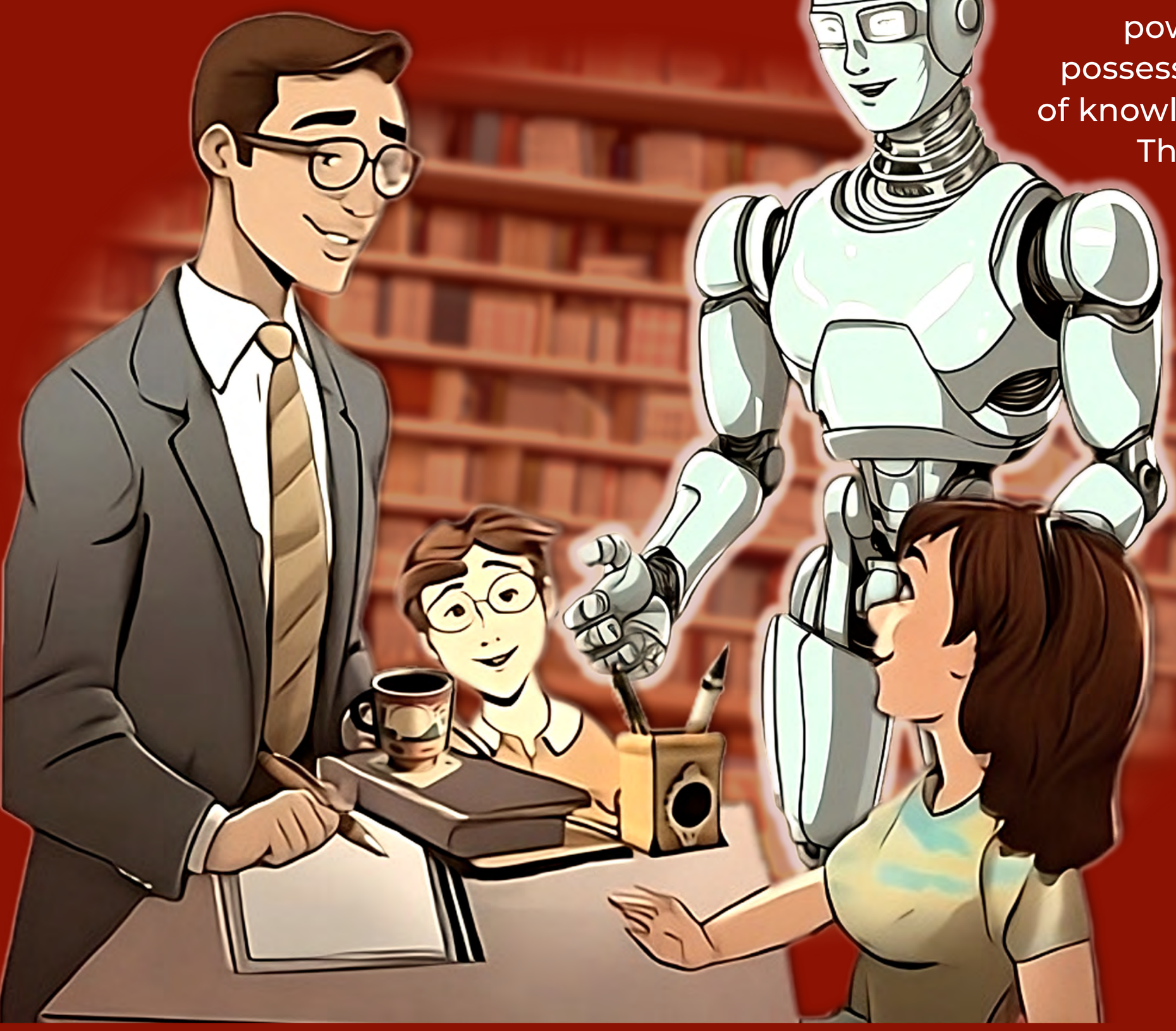


In this article, we will analyze the current and future impact of AI on education, with a particular focus on the role of ChatGPT. Additionally, we will touch on AI's influence on the industry, engineering practices, and daily life. In doing so, we will also discuss potential dangers and controversial topics associated with AI.

Education

Artificial intelligence (AI) is rapidly transforming the landscape of education at schools and universities. ChatGPT, a powerful language model developed by OpenAI, has become a valuable tool for students and educators alike. ChatGPT's ability to generate human-like responses and provide instant assistance makes it a powerful tool for learners who wish to explore complex scientific concepts, solve problems, and seek guidance. In the context of our technological development, it is no exaggeration to say that generative AI can be regarded as the next step following innovations such as the calculator, the internet, and search engines.

Imagine a student facing a challenging question in a science class. With future versions of ChatGPT or related products such as Google’s Bard, they may be able to engage in a conversation with an AI-powered "mentor" that possesses a vast repository of knowledge and expertise. This interaction would enable students to receive real-time feedback, brainstorm ideas, and gain valuable insights from an intelligent virtual assistant — anytime, anywhere, at a low or no cost.



The presence of chatbots in the classroom could empower students to become superheroes in their own right

as they are equipped with a powerful ally to conquer academic challenges, such as written assignments, essays, and problem sheets.

Moreover, AI offers personalized learning experiences, tailoring educational content to individual students' needs and abilities.

Adaptive learning platforms can leverage AI algorithms to assess student progress, identify knowledge gaps, and provide targeted recommendations for improvement. By integrating AI into the curriculum, schools, and universities can expect to enhance student engagement, foster critical thinking skills, and prepare learners for the rapidly evolving technological landscape they will encounter in their careers.

However, students should scrutinize and critically evaluate ChatGPT's output.

In other words, they need to regard it as a tool rather than a substitute for their brain.

In addition to ChatGPT, there are several other emerging tools that are or may become beneficial for educational settings. One of them is Midjourney, a program that generates images from user prompts (similar to DALL-E, which may be well-known to a broader audience). This article contains images that are generated to represent a visualization of artificial intelligence as a helpful assistant in the context of education.

While these images do highlight the important role of artificial intelligence, they also represent its ambivalence, as some individuals may find the images disconcerting. Nevertheless, it is likely that in the near future, students, teachers, and others will be able to utilize AI-based programs to write articles, create slides for presentations, prepare scientific figures and diagrams, and visualize knowledge in artificially generated videos.

While this will take a lot of work off our hands, we need to identify strategies for humans to maintain their creativity, presentation skills, and conclusive reasoning.

Images created by Midjourney and reprinted under a CC By-NC 4.0 license. Prompts used are as follows:

Visualization of artificial intelligence as a superhero that helps and supports humanity in the context of improving science and technology education. The image should involve a university classroom or lecture hall that is filled with students. Please make it in retro comic style.

Industry

The industry is also undergoing a significant transformation due to artificial intelligence.

AI-powered automation and machine learning algorithms have the potential to optimize manufacturing processes, improve product design, and enhance quality control in the magnetics industry. The impact of AI and machine learning extends beyond the classroom, as it can support engineers and researchers working in magnetics, for example. By using AI-based technology, engineers could explore new design possibilities, optimize magnetic materials, and solve complex challenges in areas such as magnetic storage, power electronics, and medical devices. Just as superheroes rely on their trusted sidekicks to overcome formidable adversaries, engineers can harness the power of AI to augment their skills, boost productivity, and push the boundaries of magnetic technology.

However, at the same time, we need to ensure that

AI-based approaches and decisions are reasonably transparent and comprehensible for humans, especially in critical applications such as aviation, autonomous driving, military technology, and medical treatments.

Daily Life

Artificial intelligence is increasingly integrated into our daily lives, transcending educational settings and industry

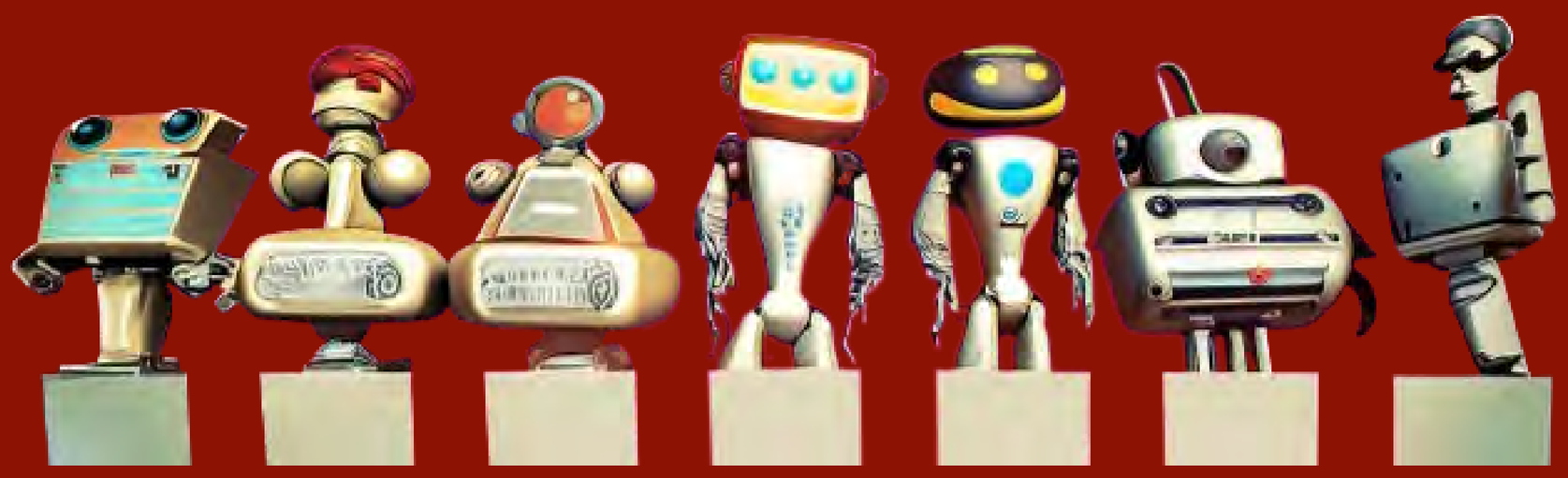
From voice assistants to smart home automation, AI technologies have become superheroes in our daily routines.

AI-powered systems enable us to effortlessly manage tasks, gather information, and make informed decisions effortlessly. Additionally, recommendation systems on platforms like YouTube, Netflix, and Amazon suggest contents content to users based on personal preferences and viewing history. Ride-sharing apps like Uber use AI algorithms to optimize driver routes and match riders with drivers efficiently. As AI continues to evolve, we can expect even more extraordinary advancements that will make us feel like characters in a comic book, witnessing the birth of futuristic technologies that seemed unimaginable before.

Potential Dangers

It is also crucial to acknowledge the potential dangers associated with AI. Ethical concerns arise regarding AI algorithms' fairness, transparency, and potential biases, which may disproportionately affect certain individuals or groups. Job displacement is also a concern as AI automation may reduce the human workforce in certain roles. Security and privacy risks exist due to the vast amounts of data AI systems rely on, requiring robust data protection measures. The lack of transparency in AI decision-making raises questions about accountability and responsibility. AI technologies can intensify social inequalities if access is limited to privileged groups. The development of AI in military applications raises concerns about autonomous weapons and warfare ethics. Finally, there are concerns about the long-term impacts and existential risks associated with AI. While it is unlikely that AI will turn against humanity and thus become our enemy, it may instead be characterized as an imperfect, non-traditional superhero. As a society, we need to find ways how to make use of it while not becoming too dependent on it.

By acknowledging the aforementioned potential dangers, we can ensure a responsible and beneficial integration of AI in education, industry, and daily life.



Conclusions

Artificial intelligence, represented by ChatGPT and other cutting-edge technologies, has become an invaluable ally in science and technology education, the industry, and our daily lives. By leveraging the power of AI, educational institutions can equip students with the tools they need to become the superheroes of tomorrow, shaping the future of science and technology. Engineers and researchers can harness AI to push the boundaries of magnetics technology, while AI-powered systems enhance our daily routines and transform various industries.

Call to Action

We understand that this is a rapidly evolving and highly controversial topic. Therefore, we are interested in hearing your opinion about the rise of artificial intelligence and its potential dangers. Please send an email to the author to get in touch:
lonskymartin@gmail.com

The Write Stuff:

MAGNETICS

by Ron Goldfarb
President Elect
IEEE Magnetics Society

Although it may be grammatically correct, sometimes the literal meaning of what we write is different from our intended meaning. Other times, our words may be ambiguous. With a bit of care, we can avoid such unpleasantness. Our readers should not have to pause to parse our sentences.

If you say that you could care less because literally everyone knows what you mean, then this article is for you.

Less Is Not More

Comparisons can be tricky. It is easy for something to be twice as big or half as long, but hard to be half as small or twice as short.

The expression “times more” often does not say what we mean. If the original value is 5, “10 times more” is 5 + (10 x 5) = 55. Our intended meaning is usually 10 x 5 = 50, for which we would properly write “10 times as much.”

The expressions “n times smaller” and “reduced by a factor of n” are logically suspect and do not mean what we may think. “Times” and “factor of” signify multiplication. For example, if the original value is 5, “10 times smaller” would be 5 − (10 x 5) = −45. What we mean, of course, is “one tenth the size” or “90 % less” or “one order of magnitude smaller.”

Instead of writing that something is 10 times smaller, we could write that its inverse is 10 times as large (but not “10 time larger”). For example, “the wavelength is 10 times lower” (wrong) could be expressed as “the frequency is 10 times as high” (right).

Just Because

“Because,” “as,” and “since” are often used interchangeably, but “as” and “since” can create ambiguity. Here are examples:

“The color of the strip changed to pink as the solution became acidic”: Is the intended meaning that the color changed *because* the solution became acidic, or is it that the color changed when the solution became acidic?

“The color of the strip changed to pink *since* the solution became acidic”: Is the intended meaning that the color changed because the solution became acidic, or is it that the color changed after the solution became acidic?

I would advise one to use “because” whenever one means “because,” in preference to “as” or “since.”

Whereas “since” properly indicates the passage of time, “while” indicates simultaneity. Some sentences where simultaneity is not intended would benefit if “whereas” or “although” were used instead of “while,” Here are examples:

“While Chris watched the Super Bowl, Jamie read a book.” If the intent is to contrast Chris’s and Jamie’s interests, then “whereas” would be preferable to “while.” If one meant that Chris and Jamie spent Sunday afternoon doing different things, then “while” is right.

“While I drink pale ales, I enjoy porters.” The use of “although” instead of “while” would remove ambiguity (and raised eyebrows).

My advice would be to substitute “whereas” or “although” for “while” unless the intended meaning requires “while,” which would be immediately obvious.

“While I drink pale ales, I enjoy porters.”

Compared to What?

In reporting our results, we often compare *A* to *B*. Or do we compare *A* with *B*? If the intent is to show similarity in things that are inherently different, use “to.” If the idea is to show differences in things that are inherently similar, use “with.” Examples:

“She compared the apples to the oranges.”

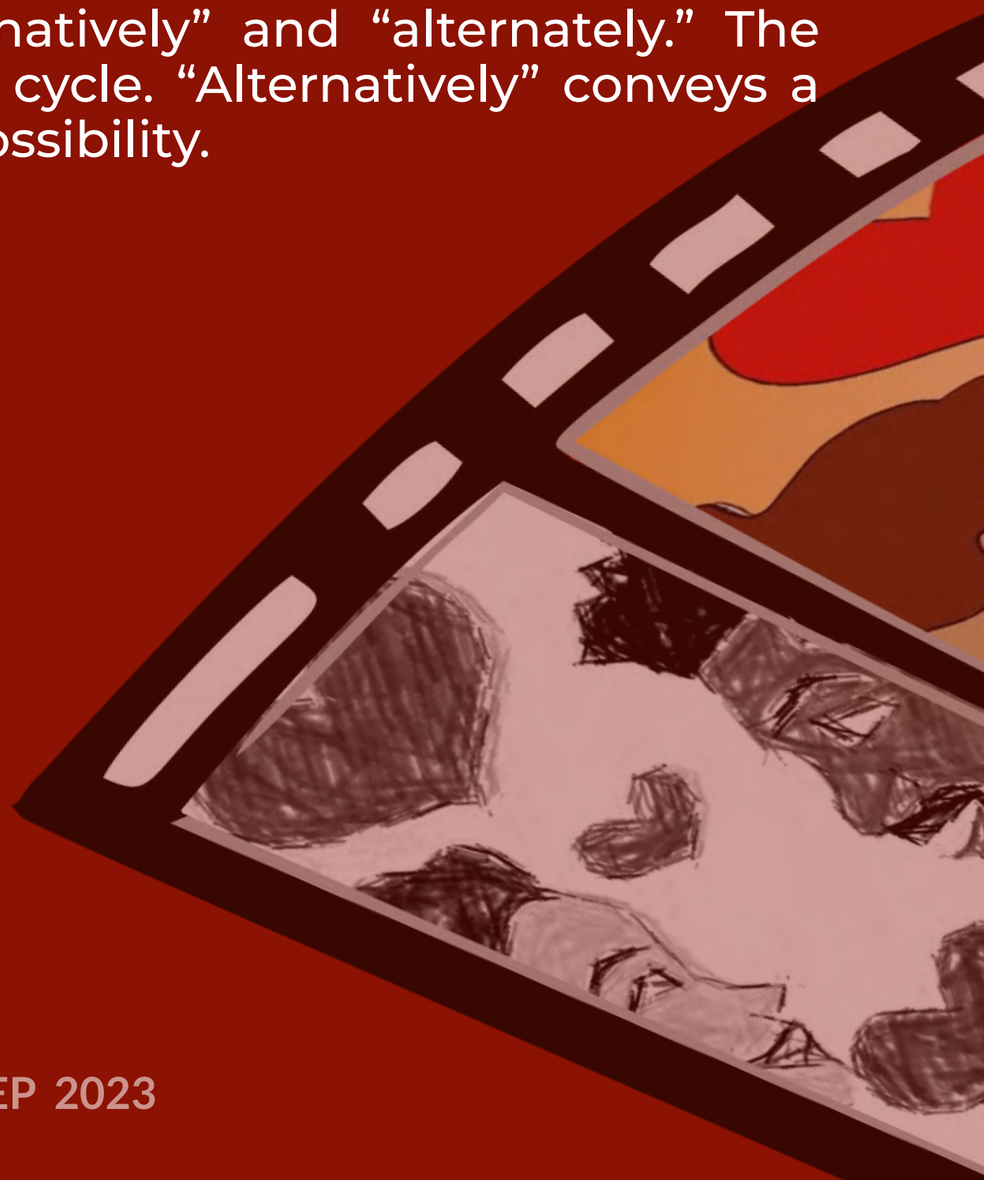
“She compared the Gala apples with the Fuji apples.”

Alternative Adverbs

A word often misused by scientists is “essentially”; for example, “the voltage is essentially zero.” Essentially” means “inherently” or “fundamentally,” which usually is not what we mean. A better word is “effectively,” which means “virtually” or “for all practical purposes.”

When we refer to the status quo, we sometimes write “presently.” A possible source of confusion is that “presently” can alternatively mean “soon.” A good substitute is “currently,” which is unambiguous.

Two words that offer options are “alternatively” and “alternately.” The latter, however, also refers to things that cycle. “Alternatively” conveys a better sense of the existence of another possibility.



Only You

Misplacement of the word “only” is pervasive in speaking and writing. I have found that almost every instance of “only” in published articles is misplaced. I got the following set of examples, which I slightly modified, from former NIST scientist, David Smith. (I give him credit for originating it because I could not find it on the Internet.)

Consider the placement of the word “only” in “Alice told Bob that she loved him”:

1. “Only Alice told Bob that she loved him.”
   [No other woman told Bob this.]
2. “Alice only told Bob that she loved him.”
   [Alice did not demonstrate her love, she only told him this.]
3. “Alice told only Bob that she loved him.”
   [Alice expressed her love to no one else.]
4. “Alice told Bob only that she loved him.”
   [Alice told Bob nothing else.]
5. “Alice told Bob that only she loved him.”
   [Alice claimed that no one else loved Bob.]
6. “Alice told Bob that she only loved him.”
   [Alice loved Bob but nothing more.]
7. “Alice told Bob that she loved only him.”
   [Alice loved no other man. Bob has now heard what he wanted to hear.]

Image generated by DallE 2, OpenAI, May 2023

Begging the Question

Aristotle identified some logical fallacies, and one of them was (in Greek) “assuming the original point” or “assuming the conclusion.” A medieval translation from Greek to Latin rendered it as *petitio principii*. In 16th century England, it became “begging the question.” Here is an Internet example of begging the question: “If left to themselves, children will naturally do the right thing because people are intrinsically good.”

When I use the term, I explain what I mean: “That statement begs the question; it assumes what it seeks to prove.”

In modern days, “begging the question” has come to mean “raising the question.” Here is an example of current usage from the Internet: “Spending the summer traveling around India is a great idea, but it does beg the question of how we can afford it.” It sounds sophisticated, but it is not.

I avoid the modern usage and substitute “raise” instead of “beg.” Why beg if you don’t have to?

Adapted from The Write Stuff: Write Literally, *originally published in March 2022 in* For Good Measure, *the internal newsletter of the National Institute of Standards and Technology’s Physical Measurement Laboratory.*

New Senior Members

The following members of the IEEE Magnetics Society were recently elevated to the grade of Senior Member:

April 2023:

Sachin Gupta
Matthew Kane
Vinayak Bharat Naik
Xuepeng Qiu
Rachid Sbiaa

June 2023:

Michael Koblischka
Kyung-Jin Lee
Mariappan Paranthaman
Ehab Sayed
Darko Vracar

For more information on elevation to Senior Member, visit the IEEE Senior Member Grade webpage

To Attend Conference Onsite or Online:

by Swathi Sakthivel
Student Travel Grant Awardee
Intermag 2023 Conference

Hi, I am Swathi Sakthivel, a Ph.D. Student working on 'Magnetocaloric Materials' at National Institute of Technology, Tiruchirappalli, India. I am one of the recipients of the IEEE Magnetics Society Students Travel Grant to attend the recent Intermag 2023 conference in Japan. As I thought back on my first-ever international on-site conference, I wanted to map some of the conference highlights as pre-, post, and peri events.

I recalled that choosing to participate in the Intermag 2023 conference was not an easy decision because, at that time,

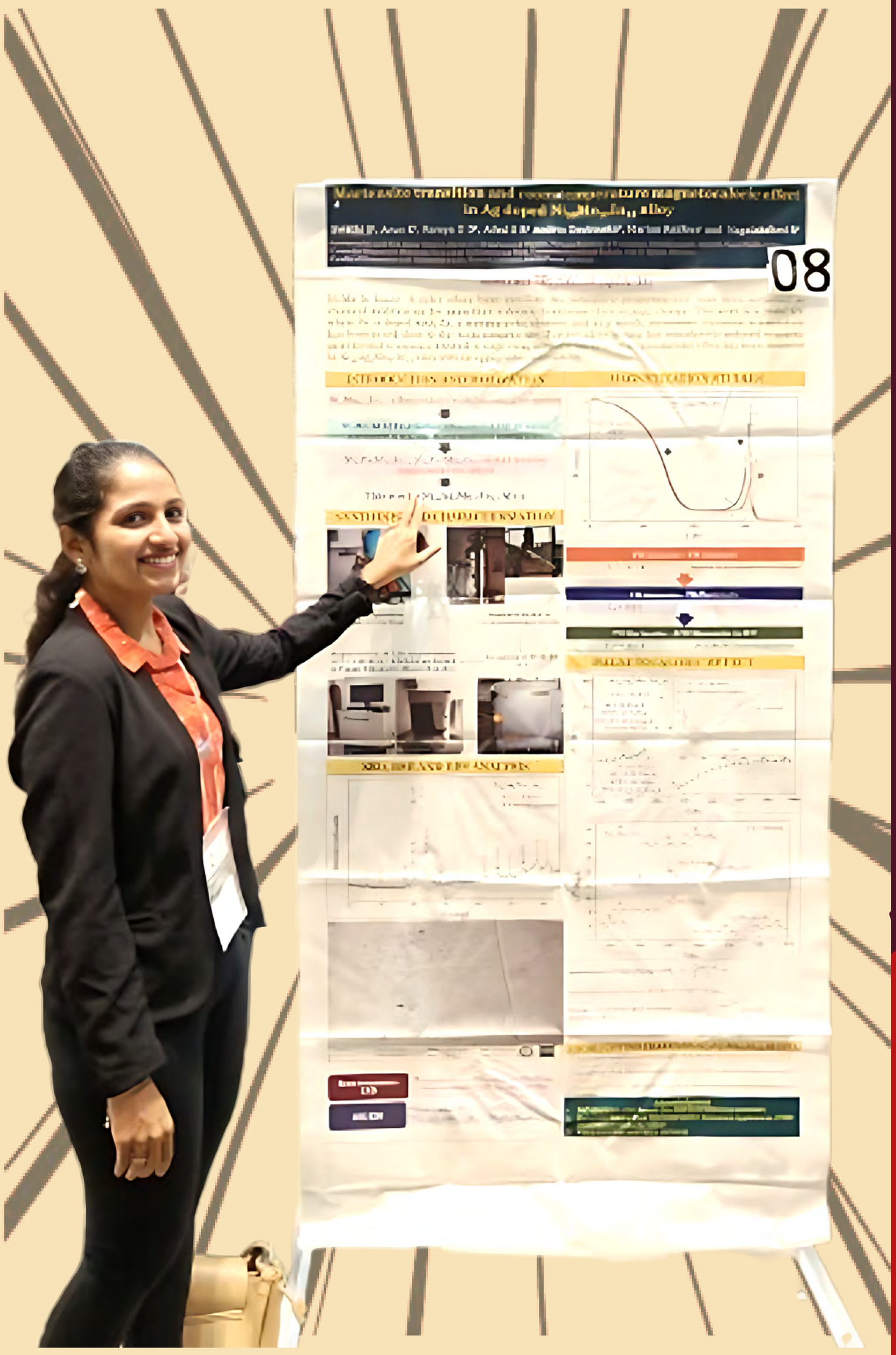
I was working as hard as I could to prepare my thesis for submission. After making up my mind to attend the conference, came my biggest challenge of deciding whether to participate in-person or online given the diverse options.

My thoughts were mired in a sea of concerns as it is not just a mere weightage of the pros and cons of each option. How does the onsite participation differ from the international online conferences (like MMM 2022) I had attended so far? Would the experience be worth taking the risk of delaying my thesis submission? If so, could I afford to travel abroad? If multitasking would be a possible solution to participating onsite, avoiding delays in my thesis submission, would I be able to multitask? More importantly, would it be wise to pass on this opportunity? What if I might meet my future postdoc employer there in person?

Despite the fact that "making the list" revealed to me that there are many benefits to attending a conference in person as opposed to doing so virtually, such as the chance to network, attend workshops, and interact with speakers, it was my curiosity about going to an international conference in person that propelled me forward in overcoming all the difficulties associated with the decision. Finance was my main concern, which formed the main motivation for my application for the IEEE Magnetic Society Students Travel Grant.

While waiting for the outcome, I made a timeline, noting my own deadlines for thesis-related work, visa application, making travel plans, finding accommodation, and exchanging currencies, etc. As soon as I received the award letter, all of these things greatly helped kicked off the action plan. But just as no plan is flawless, neither was mine. I made the usual conference mistake of failing to check the website frequently for updates. I regrettably missed reserving a spot on an enthralling lab tour to NanoTerasu, a cutting-edge synchrotron facility in Japan. Perhaps the article in the May 2023 Newsletter on ‘How to Maximize Your Conference Experience,’ would have better prepared me, but it is too bad I read it right after Intermag 2023 conference!

While I was in-person at the conference, my previous list comparing the advantages and disadvantages of in-person participation to online participation began to make sense. Here are some of my inferences, explained:



Feeling the “great reach”:

My presentation at Intermag 2023 was a poster, and the “live” ambiance brought me to the full agreement that no online media can be a competitive match. There were many attendees coming to visit the posters and very soon, the hall was filled with the voices of the presenters as they eagerly presented their “masterpieces". This is no exception for my case too and I truly felt like the reach was great as I discussed my research with industry leaders, academics, and field experts. At the same time, I could also learn about other groups' work. The same applies to the contributed and invited talks as they are accompanied by enthusiastic discussions. Even though the online recordings allow us to watch countless times from the comfort of our couch, having in-person conversations with the authors beats watching pre-recorded talks hands down!

My presentation at Intermag 2023 was a poster, and the “live” ambiance brought me to the full agreement that no online media can be a competitive match.

Connectivity:

Overwhelming!!! – I experienced an overwhelming sense of awe while standing amidst the magnetism society in the welcome reception. I have been to other national condensed matter physics conferences, but INTERMAG stands out as it is more pertinent to my field of research. [a]

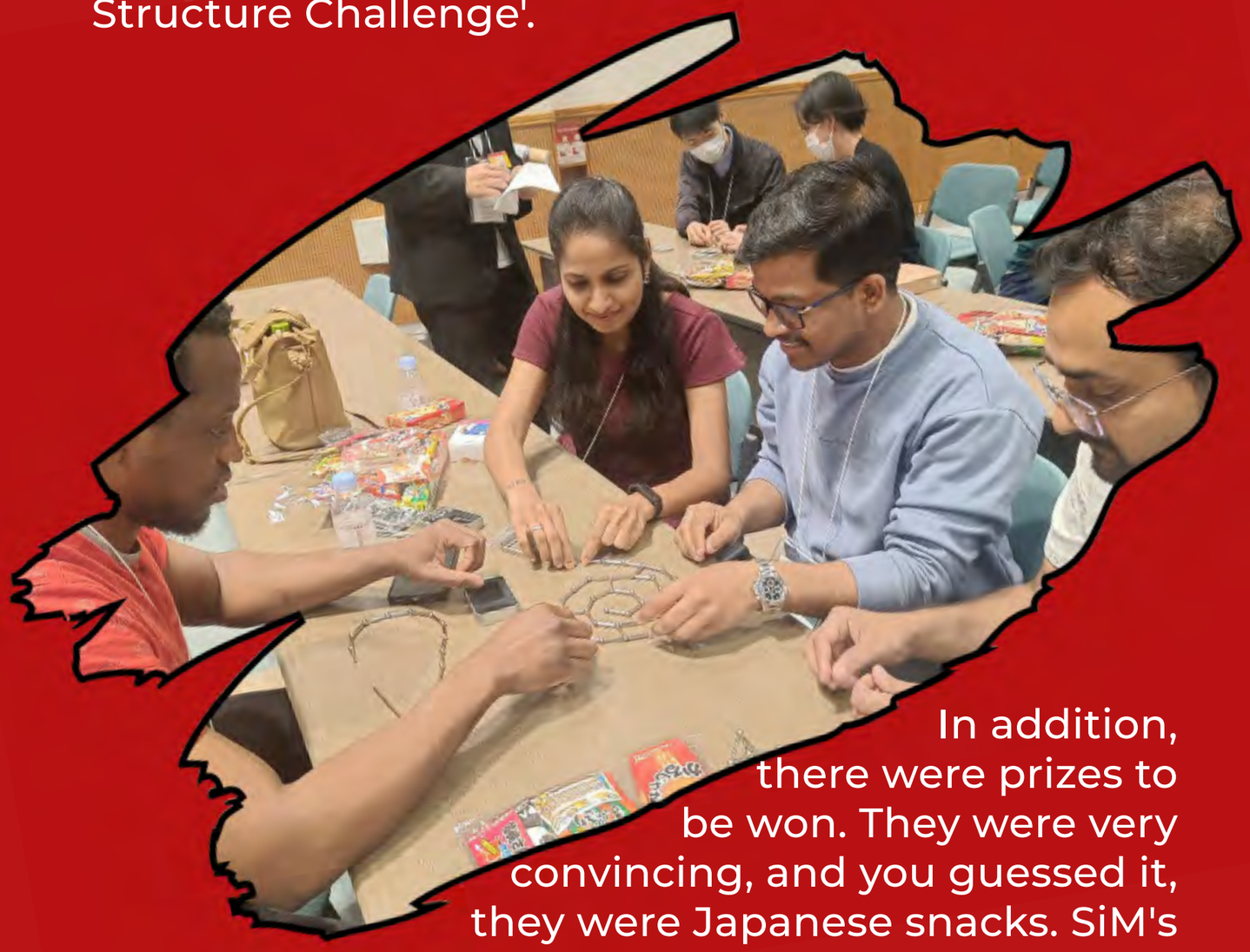
One such great experience is the facilitation provided in the special session, ‘Meet the Experts.’ In the setting, we have a roundtable discussion where we get to know the expert, and I unexpectedly made new friendships with the other participants. My friends and I had a wonderful and meaningful conversation with Prof. Oliver Gutsfliesch, TU Darmstadt, Germany, and Prof. Hossein Sepehri Amin, NIMS, Japan, about academics, industrial life, and the research progress on magnetocaloric materials and permanent magnets.

Furthermore, I met the author behind my favorite column in the IEEE Magnetics Society Newsletter - Dr. Ron Goldfarb, the author behind ‘The Write Stuff’ column. He was at the special event, ‘The Writing Workshop’ where he and other two speakers showered some tips on improving publication writing, resume and presentation skills. A two-minute conversation with him sent me a bolt of energy and was definitely an unforgettable meeting.

[a] *In addition, I participated in online conferences, such as AtC-AtG, which encompassed time zones around the globe while also offering interactive platforms to facilitate networking.*

IEEE Magnetics Society Exclusive

But above all, the special events from the Women in Magnetism (WiM) and Students in Magnetism (SiM) are indubitably my most cherished experiences. In the WiM event, I got to meet and gather with like-minded women of ambitions and, at the same time, sharing their experiences with invaluable tips on leadership skills, academic life, industrial life, etc. The SiM event, on the other hand, was lighthearted as it was filled with icebreaker activities like 'Bingo' and ' Magnetic Structure Challenge'.



In addition, there were prizes to be won. They were very convincing, and you guessed it, they were Japanese snacks. SiM's Bingo uses an innovative grid based on participation, asking questions like "Who can draw a hysteresis loop while closing their eyes?" and "Who is working on Skyrmions?" To fill the grid first and win the prize, we were racing across the room while coordinating with one another. I was fortunate in this game, but not so much in the second, where we had to form random teams and construct magnetic structures using the magnetic sticks and balls provided. The participants' enthusiasm was through the roof, despite the fact that it might sound pretty simple, and it provided a great opportunity for getting to know one another. We really worked out our minds and muscles during this session.

Culture and Food

The touch of Japanese culture in every meal and snack served was so pristine and authentic. The organizers did a spectacular job arranging a vegetarian bento (lunch box with well-balanced nutrients), which is otherwise hard to come by in the local Japanese market. The banquet centered on Japanese cuisine and served local delicacies of different kinds. Also on the sidelines were the traditional Japanese art classes like chopstick making and doll painting. Some participants enthusiastically grabbed the offer of wearing kimono, the ethnic Japanese dress, during the banquet.

The key is to forge the connections at the conference, but it doesn't end there, does it? After returning home, I reached out to almost everyone I met at the conference through mail/LinkedIn/Research Gate. I got things started by refreshing their memories by retelling our conversation or sending them our photos. This was at the top of my post-conference to-do list as it has to be done while everyone's memories are still fresh. The next thing I did was to sign up for the WiM mailing list, which I learned about during the WiM session. Personally, I consider it is worthwhile to stay in the loop with your relevant peers to be informed and contribute to the development of the Magnetics Society.

> As I wait my defense, I am looking for a 'postdoctoral position' in a suitable group in Europe. This conference has helped me in more than one way as I get ready to apply for postdoc abroad and move out of my home country and thrive elsewhere. Intelligence is, after all, the ability to adapt to changes. Despite the pandemic being over, there are still a number of factors that can prevent people from traveling abroad frequently. That being the case, an online conference is still my go-to option. Even if there is only a slim chance that I can attend the next international magnetism conference, I will unquestionably take advantage of the opportunity when it arises.

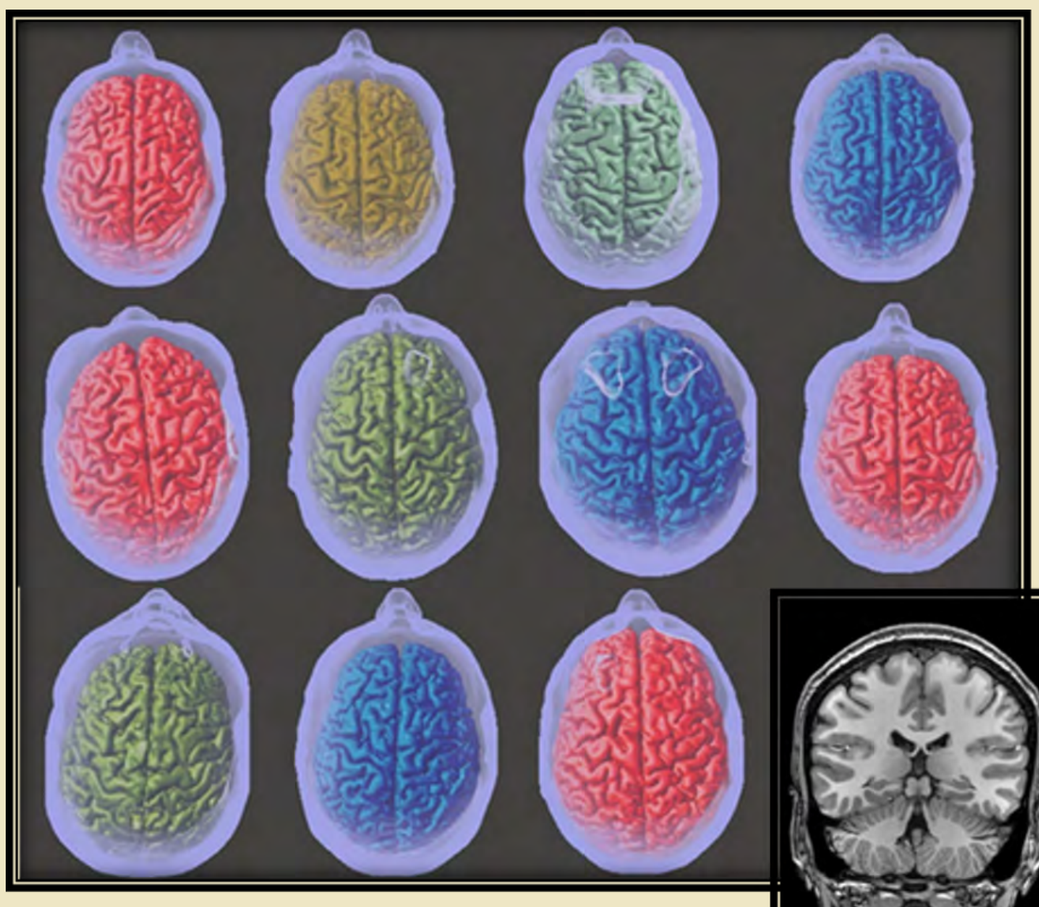
Non-Invasive Magnetic Brain Stimulation for Treating Brain Disorders

by
Mohannad Tashli [1]
and Ravi L. Hadimani [1, 2]

[1] Dept. of Mechanical and Nuclear Engineering, Virginia Commonwealth University, USA

[2] Martino's Biomedical Imaging Center, Harvard Medical School, Harvard University, USA

Transcranial Magnetic Stimulation (TMS) is a safe, effective, and non-invasive brain stimulation technique that uses a magnetic field to stimulate neurons in the brain [1, 2]. TMS has gained popularity in recent years as a potential treatment for a variety of psychiatric and neurological disorders [3]. During a TMS session, magnetic pulses are delivered to the brain via a coil on the scalp. The magnetic field of the coil passes through the skin and the skull to reach the targeted regions in the brain where it activates or suppresses the nerve cells in the specified area. The process is painless and does not require anesthesia [4]. Finite element analysis is considered one of the most important tools in determining the induced electric and magnetic fields on the brain's targeted regions. In these simulations, realistic head models are developed from MRI scans to reflect accurate brain segment properties as shown in Fig. 1.



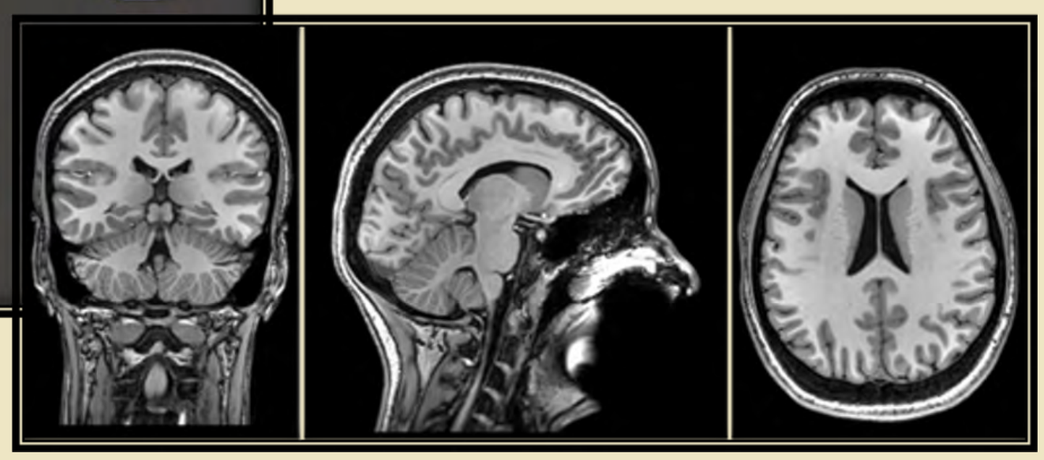


Fig 1. Left: Head models generated from MRI's of different patients to be used in TMS simulations. Right: Original MRI for a human head

[1] D.J. Stultz et al. Neuropsychiatr. Dis. Treat. ***16****, 2989–3000 (2020)*

[2] M. Kobayashi, and A. Pascual-Leone, Lancet Neurol. ***2****(3), 145–156 (2003)*

[3] Frontiers. "Rapid growth in neuroscience research: A study of neuroscience papers from 2006-2015 has revealed the most productive journals and contributing countries, and the most popular research topics." ScienceDaily. ScienceDaily, 20 April 2017

[4] Mayo Clinic- "Transcranial magnetic stimulation "

One of the most popular applications of TMS is the treatment of depression. In 2008, the U.S. Food and Drug Administration (FDA) approved TMS for the treatment of a major depressive disorder that is resistant to medication [5]. TMS has also been used to treat other conditions, such as migraine [6] and obsessive-compulsive disorder (OCD) [7]. In addition to its therapeutic applications, TMS has been used in research to investigate brain function and to study the effects of brain stimulation on cognitive and motor performance. TMS can also be used to map the brain and identify the areas that are involved in specific functions or behaviors.

TMS is generally considered safe, but there are some potential side effects, such as headaches, scalp discomfort, and muscle twitching. More serious side effects are rare but can include seizures and hearing loss. The risk of these complications is low, but it is important to discuss them with a healthcare provider before undergoing TMS treatment [4]. TMS is a promising treatment option for a variety of conditions, but it is not suitable for everyone. Individuals with metal implants in the head or neck, a history of seizures, or certain other medical conditions may not be eligible for TMS treatment. It is important to consult with a healthcare provider to determine if TMS is an appropriate treatment option [4].

Background

Faraday first proposed the idea of electromagnetic induction in 1831. Prior to the discovery of electromagnetic induction, Galvani's study demonstrated the relationship between electricity and brain tissue (1737-1789). In the 18th century, scientists carried out experiments using electrical current on human subjects, despite ethical concerns. This eventually led to the development of Electro-Convulsive Therapy (ECT) in 1937 by Italian doctors Cerletti and Bini. ECT marked the beginning of modern brain stimulation in medicine, and it was initially designed to treat schizophrenia. However, it became popular among psychiatrists for treating other brain disorders.

Transcranial Magnetic Stimulation (TMS) experiments began in 1910, with Silvanus P. Thompson stimulating the head with a magnetic field. Afterward, TMS underwent advancements until Anthony Barker developed the first functional TMS stimulator in 1985. FDA approval for therapy of certain types of medication-resistant depression came about in 2007 (FDA approval K061053). Since then, TMS has developed significantly in terms of its medicinal and therapeutic advantages.

*[5] M.S. George et al. Arch. Gen. Psychiatry **67**(5), 507–516 (2010)*
*[6] D.W. Dodick et al. Headache J. Head Face Pain **50**(7), 1153–1163 (2010)*
[7] O. of the Commissioner, "FDA permits marketing of transcranial magnetic stimulation for treatment of obsessive compulsive disorder," FDA News Release, August 17, 2018.

TMS Coil Development

The use of TMS in treating neurological and psychiatric disorders has been growing significantly in recent years. This evolution in TMS applications is possible by developing novel TMS coils that can focus the magnetic field and induced electric field to specific neurons in the brain. TMS coils can use a variety of coil shapes to direct the magnetic field to the desired location. To develop human TMS coils, researchers use computer simulations and experimental measurements to optimize the magnetic field parameters and coil design. Once a prototype is developed, it undergoes testing on animals and then human subjects to assess its safety and efficacy.

In 1985, the first TMS stimulator utilized a single circular coil, but it was not FDA-approved and offered no advantages over the Figure-of-8 coil. Ueno invented the Figure-of-8 coil in 1988, which became popular due to its comparable induced electric field and the limited magnetic field spread. Over the years, the Figure-of-8 coil has evolved with changes in turns, size, angle, and additional coil sets. Also, some coils are designed for small animal testing.

Brainsway invented the Hesed coil, a helmet-shaped coil with a tiara on top, worn close to the forehead. It has FDA approval for depression treatment and is suitable for deep brain stimulation [8].

Recently, there have been multiple coil development techniques to enhance the focality of the TMS coils. Researchers studied coil shape, position, and shielding material permeability for TMS coils in order to achieve the required stimulation. Fig. 2 shows the quadruple butterfly coil configuration on a human head model. The electric field variations associated with different coil designs and orientations are illustrated in Fig. 3 [8] (see next page).

Fig 2. Quadruple butterfly coil configuration on dorsolateral prefrontal cortex.

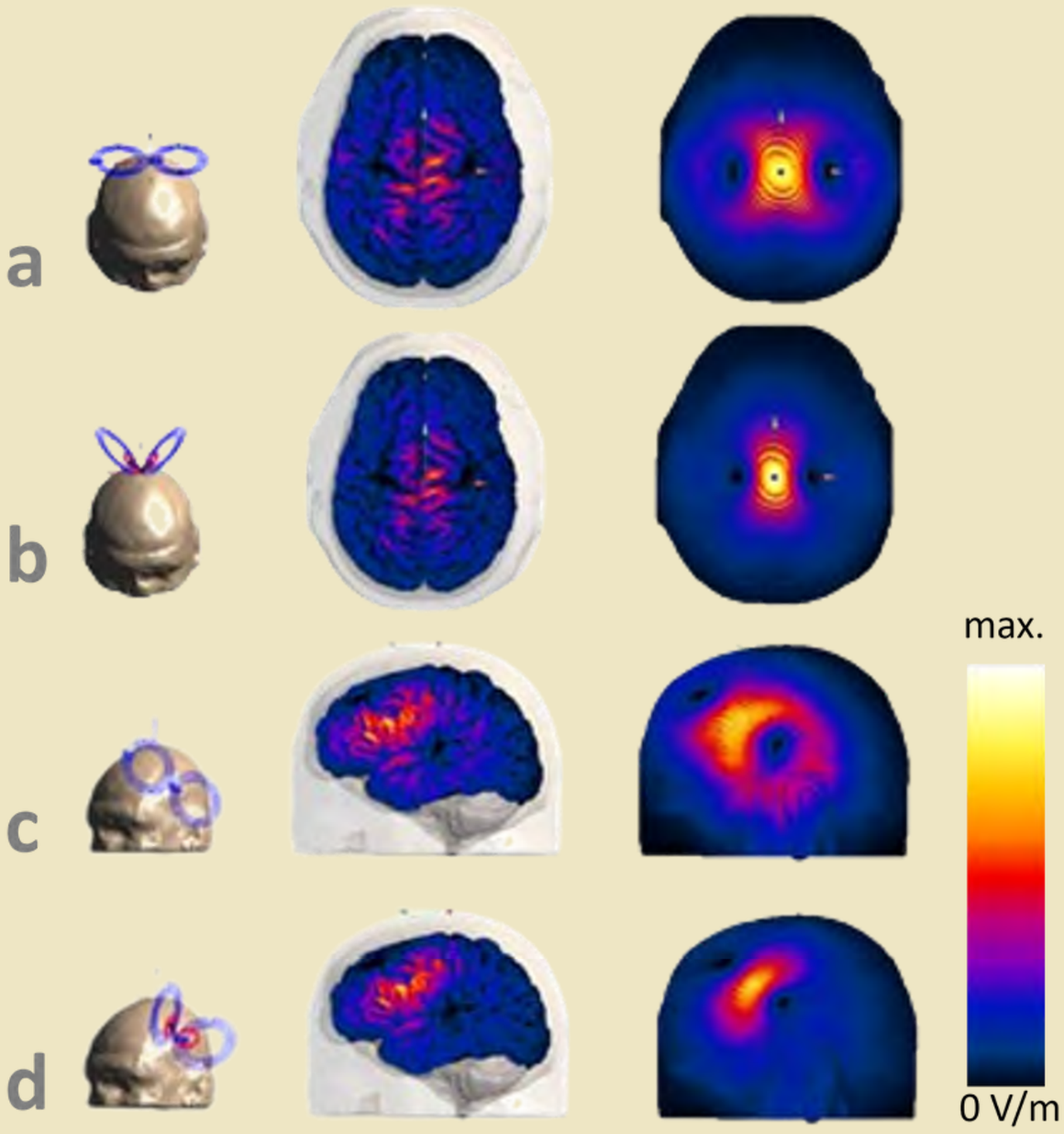


Fig 3. Induced electric field on the grey matter and scalp due to (a) Figure-of-8 coil on the vertex. (b) Quadruple Butterfly Coil on vertex. (c) Figure-of-8 coil on dorsolateral prefrontal cortex. (d) Quadruple Butterfly Coil on dorsolateral prefrontal cortex. Images are reproduced with author permissions from [8].

Another way used to concentrate the magnetic fields to a specific region of the brain is using a soft magnetic material core in TMS coils and changing the core shape as shown in Fig. 4 [9]. Simulation results in Fig. 4 shows how different core shapes affect the focality of the magnetic field on the rat's brain head model. In addition, it shows the magnetic field full-width half maximum for different cores.

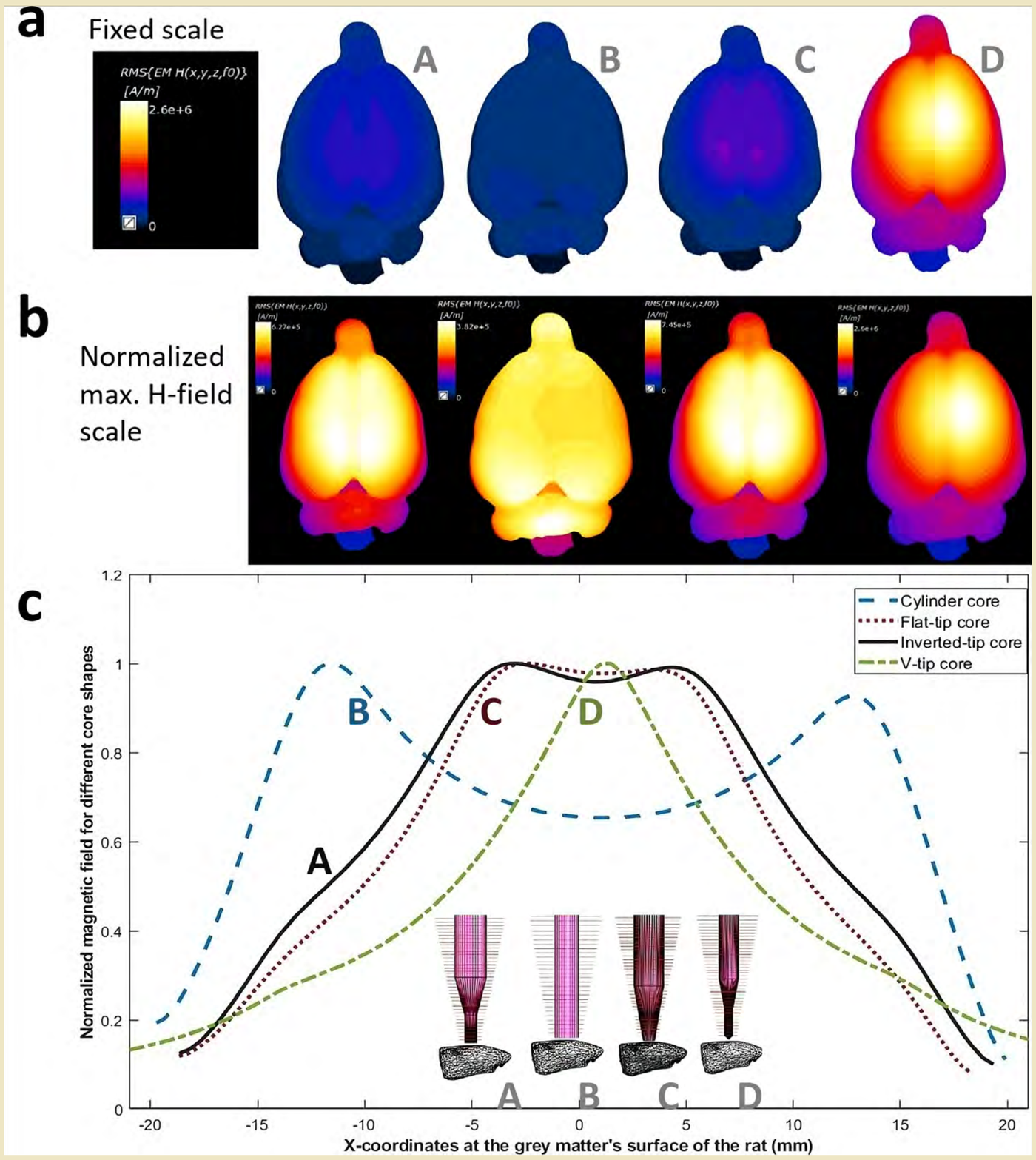


Fig 4. (a) Induced magnetic field of different focused ferromagnetic cores: A, B, C and D. (b) Normalized magnetic field to present the focality of ferromagnetic cores (V-tip core has the highest focality). (c) Magnetic field FWHM of different core shapes to show the focality of these cores. Images are reproduced with author permissions from [9].

*[8] P. Rastogi et al. AIP Adv. **8**(5), 056705 (2018)*

*[9] M. Tashli et al. AIP Adv. **13**(2), 025319 (2023*

Future Work

TMS is primarily used to treat depression, obsessive compulsive disorder, and smoking cessation, but there is growing interest in using it to treat other conditions that require focal stimulation. This could be done by developing new TMS technologies; such as the development of a more focal coil that targets specific neurons in the brain that is responsible for the symptoms of these diseases which will open up remarkable possibilities in the field of neurostimulation.

Authors would like to acknowledge Dr. David C. Jiles and his team from Iowa State University for their invaluable contributions to the field. In addition, authors would like to thank Dr. Farheen Syeda and Dr. Ivan Carmona for all that they have done for TMS development.

Mohannad Tashli was born in Amman, Jordan in 1991. He received his B.S. degree in mechanical engineering from The University of Jordan, Amman, Jordan in 2014. Currently, he is pursuing his PhD degree at Virginia Commonwealth University. His research interests include transcranial magnetic stimulation (TMS), ferromagnetic cores, TMS coils, magnetic materials, material characterization and machine learning.

Dr. Ravi Hadimani is an Associate Professor and the Director of the Biomagnetics Laboratory at the Department of Mechanical and Nuclear Engineering of Virginia Commonwealth University. He is also a Visiting Associate Professor at Harvard Medical School, Harvard University. He founded the IEEE Joint Magnetics and Engineering in Medicine and Biology Society's Richmond Chapter, and he is the current vice chair of the chapter. He has served as a Project Scientist at the Institute of Materials Research and Innovation of the University of Bolton, UK. He was an Adjunct Assistant Professor and Associate Scientist at Iowa State University and was also an Associate at Ames Laboratory, US Dept. of Energy. He is an Associate Editor of journals, Frontiers of Neuroscience, and American Institute of Physics (AIP) Advances. Dr. Hadimani's research focuses on biomagnetic materials and devices for biomedical applications, magnetocaloric heating/cooling, and energy harvesting. He has a 'first class' honors degree in mechanical engineering from Kuvempu University, India, a MS in Mechatronics from University of Newcastle, UK, and a Ph.D. in Electrical Engineering from Cardiff University, UK.

WHAT HAPPENED AT THE 2023 IEEE MAGNETICS SUMMER SCHOOL

by Vito Puliafito
Italy Chapter Chair &
Director of 2023 IEEE
Magnetics Society
Summer School

Even weeks after its ending, I believe that one day far ahead, I will see the 2023 IEEE Magnetics Society Summer School as the most intense, exciting, and successful event I have ever organized in my career.

The School was held from June 11 to 16, in Carovigno, Italy, about a hundred kilometers south of Bari. It was my pleasure to serve as Director for the School, together with Giovanni Finocchio, and to work closely with the IEEE Magnetics Society Educational Committee, in particular with its Chair, Hyunsoo Yang.

Making a report of such a demanding and rewarding event is not easy, considering that I feel like I want to convey the great enthusiasm and interest of everyone participating in the school.

In my opinion, the success of the school was due to a perfect balance of several ingredients: the enthusiasm of the students, high-quality lectures, a nice location, and an intense social program.

We had 94 students from 36 countries, including Algeria, Brazil, Canada, Jordan, and Venezuela, to cite a few, in addition to large representatives from European countries, India, China, and USA. Lectures were given by 15 scientists, with a nice opening by President Atsufumi Hirohata, the contributions of three 2023 Distinguished Lecturers, and the lectures by the two Directors.

All the lecturers commented on the active participation of the students during question time, and discussion was rich during breaks and poster sessions as well.

After a day of listening to the fundamentals and applications of magnetism, students appreciated the chance to play a quiz about the daily contents, which was very fun for everybody.

Students presented their work in three poster sessions. “There are very talented researchers,” said one of the lecturers

selecting the daily best posters. The selection awarded 9 students, who gave a short presentation at the Politecnico di Bari on June 15. After those presentations, all the students voted for the best presentation award.

The School was held at Riva Marina Resort, a venue that had already hosted Magnonics in 2019. Once again, this resort turned out very convenient for everyone,

considering we had good school facilities, comfortable accommodations for everybody, excellent food throughout the day, an amazing beach and swimming pool available, an open bar, and music every night.

The school aimed to be a complete experience including an intense social interaction to create friendships, collaborations, and long-lasting memories of the week spent in Italy.

On Tuesday 13, we had a rich social dinner on the terrace of the resort, which was great for the food, but even more unforgettable for the music.

When I was organizing that night, I was sure it would be a great moment of joy and union between all the students. To be honest, not only the students enjoyed the music,

considering that the dance was opened by the Director of my Department, who was invited for dinner, and I myself danced all night with no break

!!!

The following day, after the poster session, we visited Polignano a Mare, a jewel of Apulian coastline.

Many students bathed in the sea in the wonderful frame of Lama Monachile.

In addition, we could enjoy the celebration of the patron of the city, which is

SAINT VITO

.

As I bear that name, this huge celebration, with a procession on the sea, lights everywhere, and fireworks, created some suspicion about me.

Was the trip to Polignano organized to celebrate the Saint bearing the name of the Director of the School?

Or was the entire celebration in Polignano organized by the Director himself?

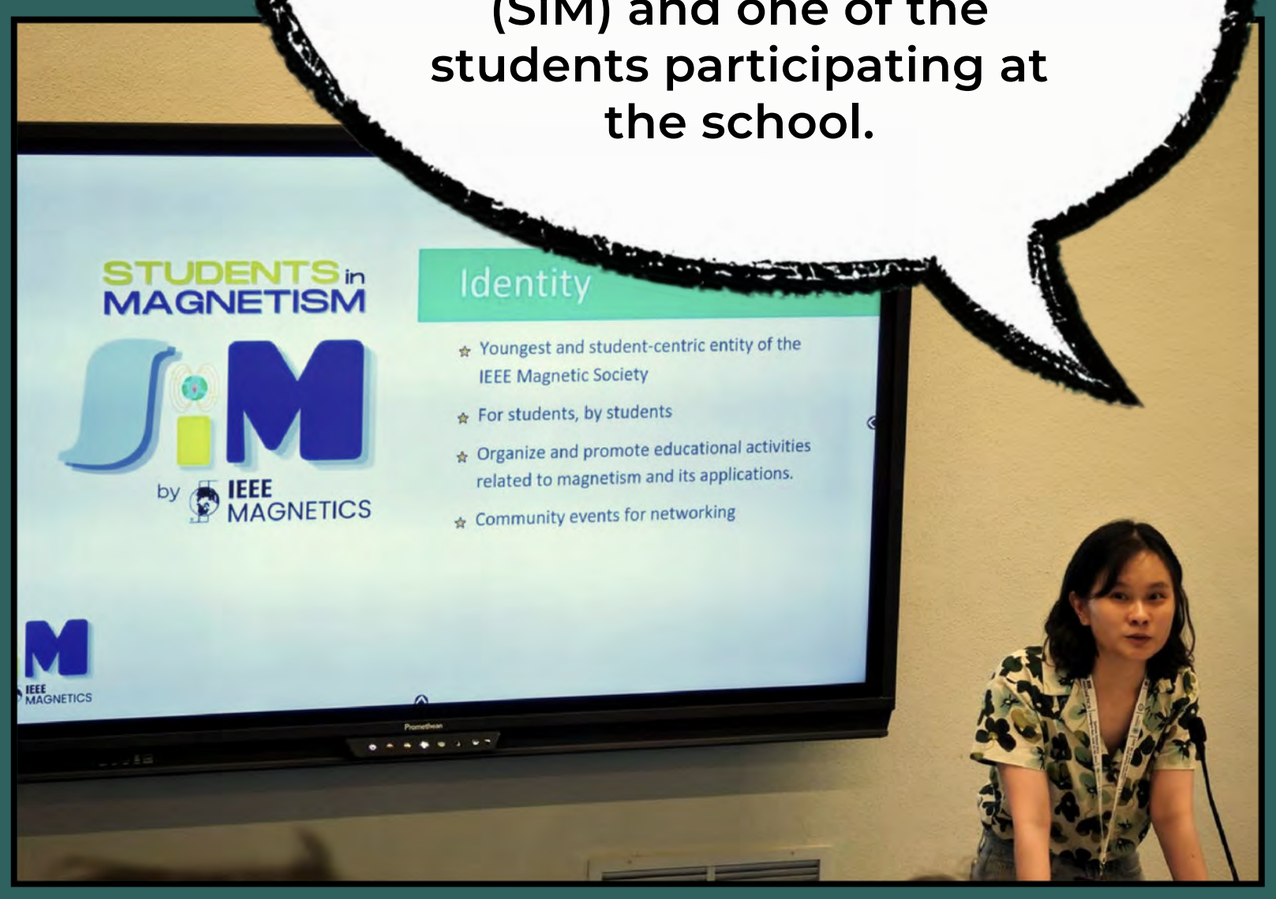
The truth is that luck plays a key role sometimes, since I didn't know anything about this celebration before that evening!

Thursday 15 was the day to visit Bari. The morning was at the Politecnico, we started with a photo group in the Atrio Cherubini and finished with a packed lunch eaten on the campus.

In the middle, it was very nice to see the students in one of the classrooms where I usually give lectures on the theory of circuits to undergraduate students.

There, we had the presentations of the best poster awards

and a presentation about Students in Magnetism given by May Inn Sim, chair of Student in Magnetism (SiM) and one of the students participating at the school.



In the afternoon, everyone was free to visit Bari, in particular the old part of the city. Nice pictures of the different groups were uploaded that day in our common chat to tell the stops of their interesting tour. The whole group met in the heart of Barivecchia, in largo Albicocca, where we had a typical panzerotto, a treat for everyone's palate.

Social interaction was enriched during the nights at Riva Marina, until the very last night of Friday 16, when the last dances and drinks enforced a beautiful experience for everyone.

Their passion for magnetism, their curiosity to discover science and local traditions, their joy dancing pizzica and visiting Polignano and Bari,

all that offered by those students made the 2023 IEEE Magnetics Society Summer School a great experience for me.

On the last night, more relaxed, I focused on the students' eyes,

which brought me back to my experience at the Summer School in New Orleans 12 years ago.

And I realized that everyone who has gotten the chance in his/her life to participate in this traditional event of the IEEE Magnetics Society can always remain a student of magnetism, with his/her curiosity, strength, and will to do something for the community.

STUDENTS REVIEWS

COMING UP IN NEXT NEWSLETTER

stay tuned

For more information about the 2023 IEEE Magnetics Summer School, visit the official page

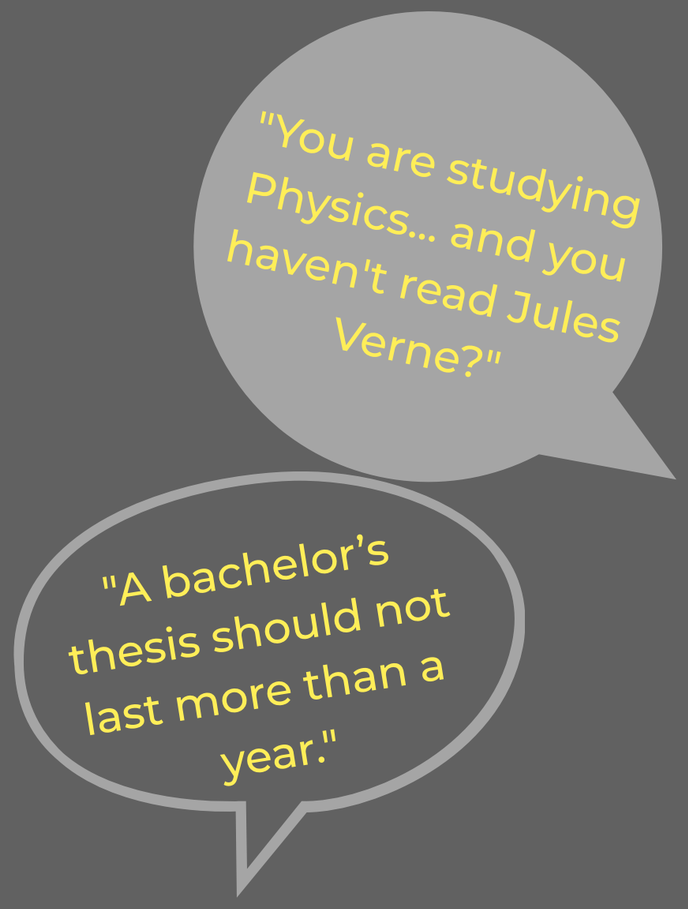
and a supplementary page by the local organizers including further details.

THERE IS NO PATH; THE PATH IS FORGED AS WE "WALK"

by Luis Avilés Felíx
Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina

On March 11th, 2020, during the final stage of my second postdoc, I received confirmation that my application for a permanent position as a researcher in Argentina had been accepted. Three years later, I was ready to advance my research career and share my experiences in academia to benefit early-career scientists.

A few years ago when I was finishing my postdoc, a colleague posted a comment on LinkedIn stating that most Ph.D. holders do not actually know the path to success in Academia, despite thinking they do. This statement stayed stuck with me, along with other phrases I've heard from my mentors over the years as a physics student.



The researcher's statement made me realize that many people in academia struggle with a lack of clear understanding of their goals or what the future holds for them.

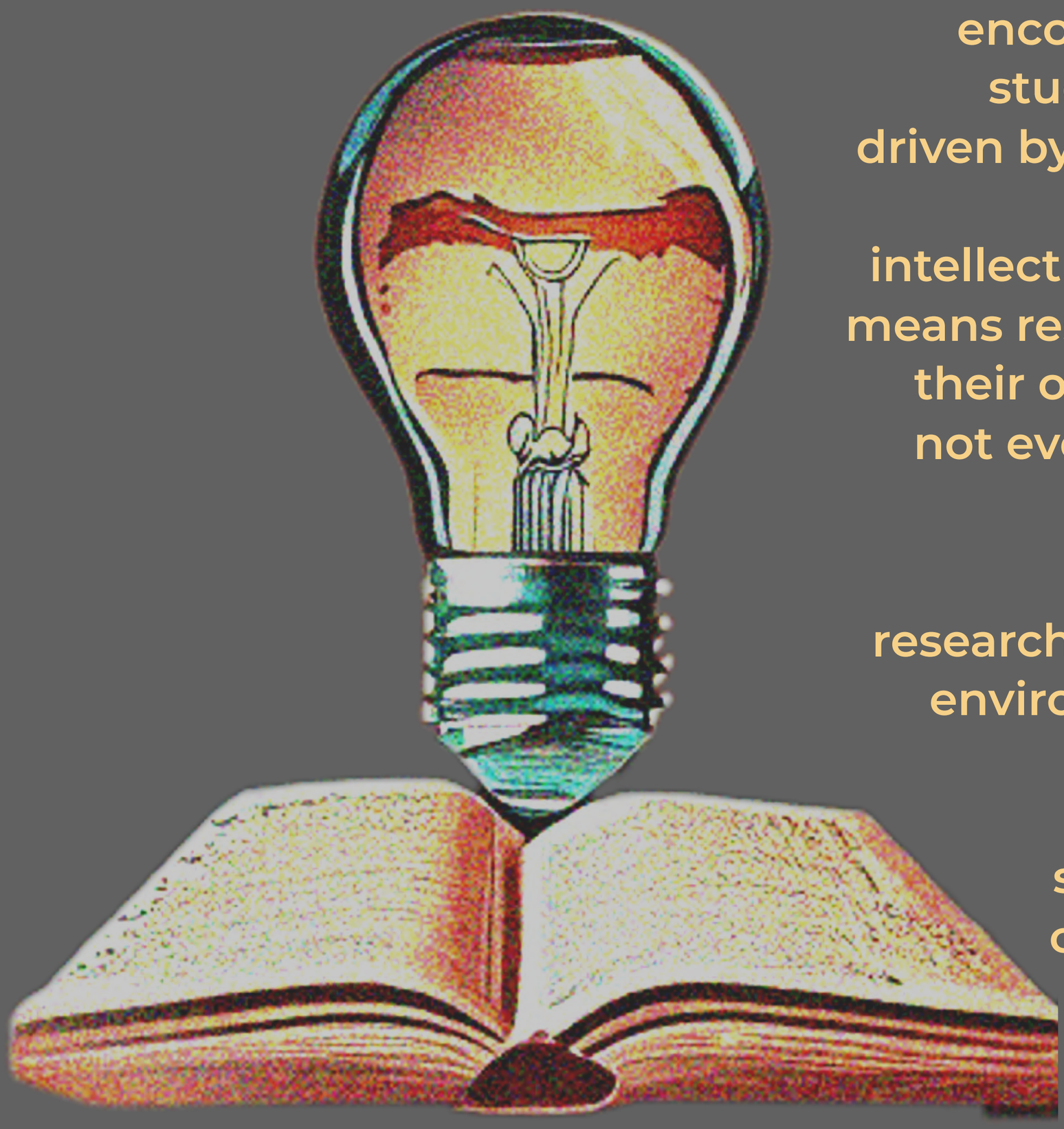
Throughout my years in Academia, I have interacted with people from all over the world. I have shared experiences with postdocs who aspire to work in industry, others who aim for permanent research positions, doctoral students who do not intend to pursue postdocs, others who do, and people who have the potential to become outstanding researchers but do not want to, and those who want to but lack the necessary qualifications. These issues have been the subject of intense debate, and Nature has even published several articles on the topic, including "A Person Before a PhD: Understanding and Combating An Academic Identity Crisis" [1] and "Too Many PhDs, Too Few Research Positions [2]."

*[1] R. Seaborne, A person before a PhD: understanding and combatting an academic identity crisis, Nature **578**, 327-328 (2020)*

[2] J. Gould, Working Scientist podcast: Too many PhDs, too few research positions, Nature Careers Podcast (2019).

During their doctoral studies, students focus on synthesizing years of work into a thesis that might be considered a CV to the scientific community, but they often struggle with what to do after that. This is where many students experience an existential crisis, believing they understand the scientific community through guidance from their supervisor and interactions with peers and lab members. However, one's perception of Academia is limited until completing one or two postdocs.

Choosing a career in research can be less conventional than professions like Law, Medicine, or Engineering. In those fields, students have a clear understanding of each sub-branch of their specialty, which allows them to make informed decisions about their career paths. A researcher, on the other hand, can be described as a professional who generates new knowledge using the scientific method, but this definition can be very broad.



"New knowledge" can encompass various fields of study, and researchers are driven by curiosity, the desire to explain the world, and intellectual independence. This means researchers must explore their own areas of interest, as not everything is established.

To pursue a career in research, one needs to be in an environment that stimulates intellectual freedom in addition to fostering a sense of belonging and collaboration with other scientists in order to procure funds and write proposals.

Now returning to the statement that Ph.D. holders do not necessarily know the path to success in Academia, despite thinking they do; I am convinced that the path is not fully determined. Even researchers may face changes along their paths, like choosing different research topics, transitioning to industry (could be because of unfulfilling research, or not enjoying the work environment, etc.), or other personal reasons. The path forges as you begin in the academy; my path changed during my two postdocs. In the end, I was very fortunate to find a research group that not only supports my research aspirations but also gives me the intellectual freedom to explore my curiosity in magnetism.

There is a Spanish poem penned by Antonio Machado, that confidently asserts,

"CAMINANTE, NO HAY CAMINO, SE HACE CAMINO AL ANDAR."

translating to "Walker, there is no path, the path is made by walking". This statement holds true for every path to academia, as perspectives may change at different stages of a research career or if one's goal after Ph.D. is clear.

The path to Academia involves constant growth, self-discovery, and adaptation, requiring resilience, determination, and a passion for knowledge. Reflecting on my own experiences, I aim to inspire and guide early-career scientists in navigating the uncertainties and challenges that come with pursuing a career in research.

MAGNETIC FRONTIERS 2023 WAS A GREAT SUCCESS

by Andrew Kent
and Enrique del Barco
Magnetic Frontiers 2023 Conference Chair

The IEEE conference Magnetic Frontiers, held from April 19th to April 22nd, 2023, at the Rosen Centre in Orlando, Florida, was an outstanding event that brought together a diverse group of attendees from different parts of the world. The conference successfully achieved a balance between young researchers, such as graduate students and postdocs, and senior scientists.

One of the notable aspects of the conference was the wide range of topics covered in the keynote, invited, contributed talks, and poster presentations. Magnetic quantum technologies and condensed matter physics were explored in depth, with sessions dedicated to spintronics, magnonics, cavity magnonics, quantum magnetism, quantum sensing, and computing. The speakers delivered exceptional presentations, providing both background information and the latest research results in their respective subfields. These talks sparked animated questions and discussions, fostering a vibrant intellectual atmosphere.

Furthermore, the conference organizers ensured ample opportunities for networking and idea exchange among the attendees. By accommodating everyone in the same hotel and providing common breakfasts and lunches, they created a conducive environment for fostering collaborations and building connections.

The conference excursion to the Kennedy Space Center offered a unique experience for participants, and the special conference wine tasting organized by Wine DOS added an enjoyable touch. The well-attended conference banquet was a testament to the success of the event, as captured in the conference photo.

In terms of demographics, the conference attracted 56 participants in total: 36 senior participants (postdoc level and above) and 19 graduate students. The program consisted of 6 Keynote talks, 10 invited talks, 15 contributed talks and 6 poster presentations.

There were 44 men and 12 women (21% female) and the people from the following countries represented in the attendee: United States, Canada, Germany, Italy, Morocco, Netherlands, Spain, China, Japan and Taiwan. As expected for a US based conference, most of the attendees were from the US (70%), then Europe (10%) and balance from Canada, Japan, Korea and Morocco.

IEEE Magnetics Society was promoted as a supporter of all the conference material, notably the conference website, email announcements and correspondence, the conference program, and name badges at the beginning and conclusion of the conference.

The quality of the presentations was exceptional, with speakers providing background and very recent results in their subfields. Overall, the conference was a testament to the strength and vitality of the IEEE Magnetics Community, highlighting the breath in active areas of quantum magnetism research.

Groundbreaking Advances in Integrated Magnetics Unveiled at iSIM 2023 in Sendai

by Nian Sun
iSIM2023 General Chair
(Northeastern University, USA)

The First International Symposium on Integrated Magnetics (iSIM 2023) took place in Sendai, Japan, on May 14-15, 2023. Held as a satellite symposium to the prestigious IEEE International Magnetics Conference, INTERMAG 2023, iSIM 2023 proved to be an exceptional platform for researchers and industry experts to explore the latest breakthroughs in the field of integrated magnetics.

The iSIM2023, hosted in the picturesque city of Sendai, drew together leading scientists, engineers, and innovators from around the globe. There were 59 attendees, 30 from Asia Pacific, 16 from European Union, and 13 from America.

The invited talks had three sessions spanning 1.5 days, covering three topics on Integrated Magnetic Sensors (Magnetoelectric sensors, XMR sensors, etc.), Magnetics for Integrated Circuits (integrated magnetics for power and RF integrated circuits, etc.), and Magnetics for Disruptive Technologies (high-performance computing, flexible electronics, etc.). At the same time, there were 36 Poster presentations on topics related to integrated magnetics. The symposium served as a collaborative space for exchanging knowledge, fostering new collaborations, and discussing emerging trends in integrated magnetics.

The iSIM2023 concluded with a closing Award Ceremony, where outstanding contributions to the field were recognized. The iSIM2023 Awards were listed as follows:

Distinction Award

Prof. Eckhard Quandt
Kiel University, Germany

iSIM Young Investigator Award

Prof. Takafumi Nakano
Tohoku University, Japan

Prof. Niko Münzenrieder
Free University of Bozen-Bolzano, Italy

iSIM Travel Award

Ludovico Cestarollo
Cornell University, USA

Mateusz Golebiewski
Adam Mickiewicz University, Poland

Honami Nitta
Tokyo Institute of Technology, Japan

iSIM Best Poster Award

CP-05 Ludovico Cestarollo
Cornell University, USA

CP-14 Yuanxun Ethan Wang
University of California at Los Angeles, USA

CP-20 Honami Nitta
Tokyo Institute of Technology, Japan

CP-24 Sarath Arackal
Indian Institute of Science, India

CP-25 Ranajit Sai
University College Cork, Ireland.

The symposium's success sets the stage for future iSIM, ensuring continued progress and advancements in the field of integrated magnetics. iSIM2024 will be held in Rio de Janeiro, as a satellite symposium to Intermag 2024 Conference.

Satellite Meeting of Intermag 2023 Conference

INTERNATIONAL NETWORK FOR SPINTRONICS: EARLY CAREER RESEARCHERS MEETING (INS-ECRM)

by Weida Yin

As a satellite event of Intermag 2023 Conference, International Network for Spintronics: Early Career Researchers Meeting (INS-ECRM) aimed to bring together early career researchers in the field of spintronics to exchange knowledge, foster collaborations, and inspire new research directions.

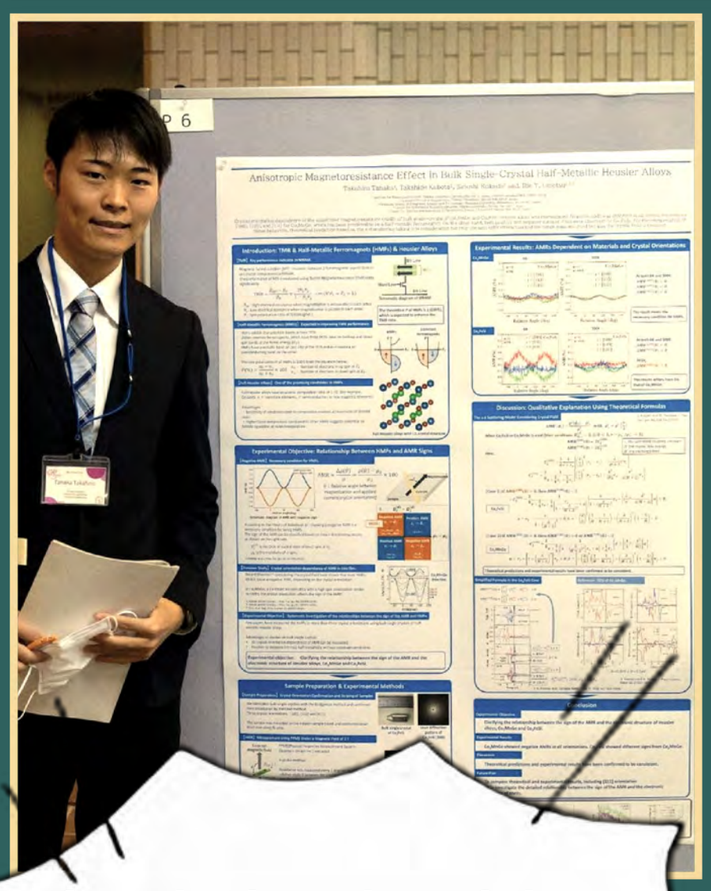
INS-ECRM was held on May 12 (Fri.) and 13 (Sat.), 2023 at Auditorium in the Institute for Materials Research, Tohoku University

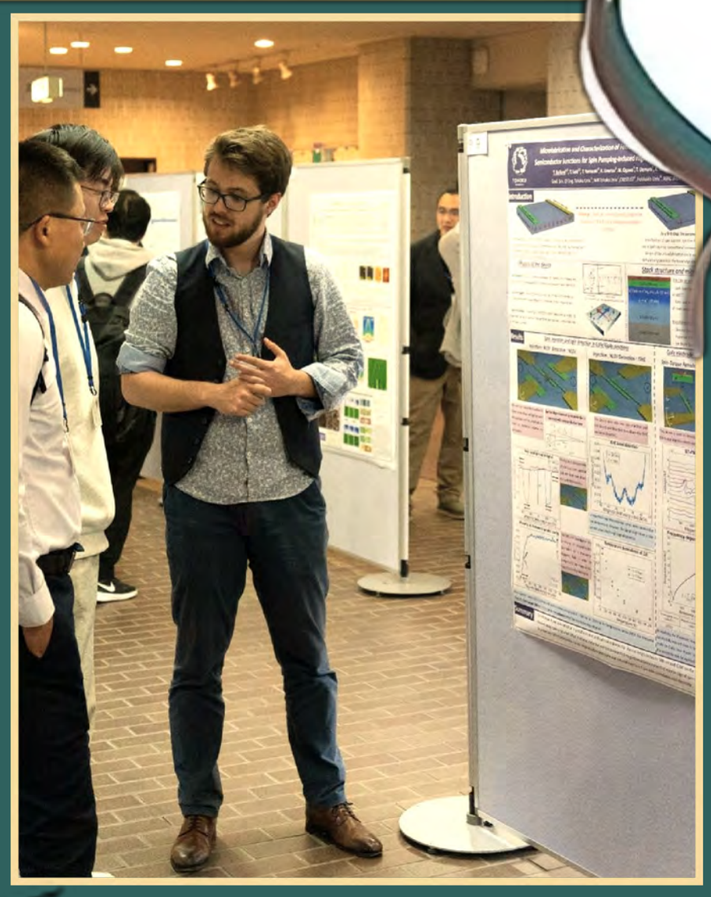
in Sendai, Japan.

The meeting provided a platform for young researchers to showcase their work, receive feedback, and engage with established experts in the field.

The event comprised four sessions featuring four keynote speakers, eleven invited speakers, and fifteen oral speakers. The total number of participants was about 60.

Furthermore, a poster session was held on the first evening, where ten students from Tohoku University showcased their research.





During the poster session, attendees were treated to a delightful spread of food, beverages, and beer.

The lounge area buzzed with excitement as participants engaged in lively conversations while enjoying the refreshments.

After the last day of the INS-ECRM, we also organized a BBQ party at Kirin Beer Factory located near the Sendai Port.

Given the opportunity to socialize and discuss research over food and drinks, participants found it easier to establish connections and build friendship.

Many early career researchers expressed that this event helped them broaden their network and find potential

collaborators who share similar research interests.

Several students also mentioned developing new friendships with peers who work on related research topics, which they believe will contribute to future research exchanges and collaborations.

It is worth noting that the INS-ECRM marked a return to in-person meetings after a long hiatus caused by the COVID-19 pandemic.

Although the satelite meeting lasted only two days, it was a great success thanks to the full program and enthusiastic participants.

Prof. Hillebrands thanked Tohoku University and GP-Spin, and that he would invite us to their spintronics workshop in Germany. He looks forward to seeing us there.

We appreciate the financial sponsorship from Graduate Program in Spintronics (GP-Spin), Tohoku University, Japan
Engineering and Physical Sciences Research Council (EPSRC), UK.

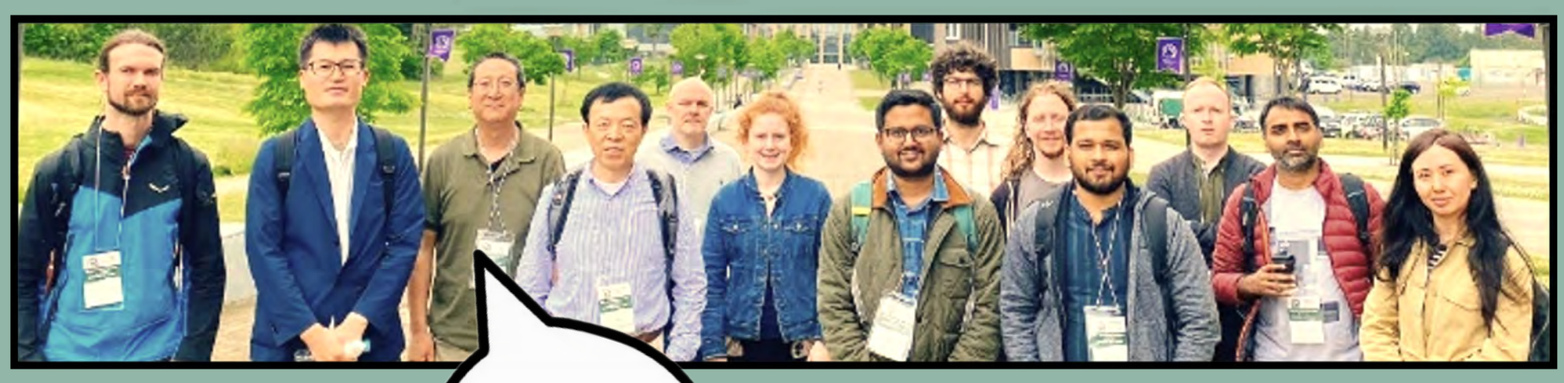
We also give our thanks to Prof. Rie Umetsu, Prof. Atsufumi Hirohata, Prof. Takafumi Sato, Prof. Makoto Kohda, and staffs from GP-Spin office. INS-ECRM can't be such a success without their help.

INS-ECRM was organized by five students from GP-Spin, Tohoku University. They are Weida Yin, Kohei Ogane, Yuan Tian, Uttam Kumar Chowdhury, and Yiming Song.

by Shin Saito
Intermag 2023 Local Committee
(Tohoku University, Japan)

On Saturday, May 20, 2023, the Laboratory Tour in Magnetism organized by Tohoku University was held with 86 participants from 16 countries (first-come-first-served basis).

The event consisted of a tour of five research centers for magnetic and spintronics materials and their applications located on two campuses of Tohoku University, divided into six groups of participants. The tour started at 8:40 a.m. from the Sendai International Center subway station, and the tour began at 9:00 a.m.



Group A

Group B

At the Katahira Campus, the group visited the office of Prof. Dr. Kotaro Honda, who invented permanent magnets and made great contributions to research on metallurgy and material properties at the Institute for Materials Research (IMR), as well as an exhibition of historical legacies in metal properties research and measurement technology.

The tour also included a visit to the Advanced Institute for Materials Research (AIMR) to see the world's highest detection performance "ultra-high resolution angle-resolved photoemission spectrometer" and Laboratory for Nanoelectronics and

Spintronics at the Research Institute of Electrical Communication (RIEC) to see the state-of-the-art research facilities for spintronics materials and device technologies. On the way, they walked around the campus and visited the Tohoku University headquarters and the statue of Lu Xun, a symbol of international friendship.

At the Aobayama new Campus, they visited the Research Center for Rare Metal and Green Innovation (RaMGI) to see research laboratories for electric vehicle motors, ultra-sensitive TMR sensors for magnetocardiographic and magnetoencephalographic imaging, and the preparation of ferromagnetic powders for permanent magnets,

and at the Center for Innovative Integrated Electronic Systems (CIES), they visited a clean room and were briefed on the status of research and development of innovative semiconductors through industry-academia co-creation using a 300 mm wafer line.

The group visited a 3 GeV next-generation synchrotron radiation facility (NanoTerasu) that is under construction and will be operational in FY2024.

The tour ended at 14:00 at JR Sendai Station. This tour was a unique opportunity for participants to tour research centers from history to cutting-edge technology in a short time and receive explanations from Tohoku University faculty members who are leading researchers in their respective fields.

Intermag 2023 conference, a prominent conference in the field of magnetism, offered not only a range of insightful scientific sessions but also an array of special sessions, specialized workshops, and engaging events. They included a writing workshop, a thought-provoking talk highlighting the contributions of women in magnetism, and various networking opportunities.

Among these, I had the honor of organizing a captivating special session titled "Magnetism in Underground Mineral Resources." This report aims to provide an overview of the organization and highlights of this engaging session, shedding light on the valuable discussions that took place.

by Sachiko Yamaguchi-Sekino
National Institute of Information and Communications Technology, Japan

The special session "Magnetism in Underground Mineral Resources" was held on May 13, 12:00-14:00 as part of Intermag 2023 Conference.

The objective of this session was to showcase the scientific advancements made by researchers in applying magnetism and generate interest in this field among the participants, while also expanding the application of research in society.

The event was carefully designed to emphasize the interdisciplinary nature of magnetism research.

By demonstrating the diverse applications of magnetism in various research fields, I aimed to portray the development of knowledge in society as a whole, encompassing a wide range of research domains.

However, after considering the growing interest in the field,

particularly evident from past sessions on Magnetism in Nature and the Universe in MMM2022 and MagnetiSiM 2022 project organized by Students in Magnetism (SiM),

the focus was narrowed down to magnetism in the geo-environment.

This choice was also influenced by the session's alignment with the current scope of the conference.

Sensing underground minerals emerged as a crucial aspect within this field, leading to the selection criteria for speakers based on the sensing situations: underwater and in the air.

Rather than focusing on the specific technologies employed, the emphasis was placed on "at where" the technologies were applied. Consequently, the selection resulted in intriguing speakers, with one involved in seafloor resource exploration by ship (actually, the sensors were carried by ship and dropped on the seafloor) and the other in subsurface resource exploration by aircraft, thereby clearly delineating the measurement devices' onboard vehicles.

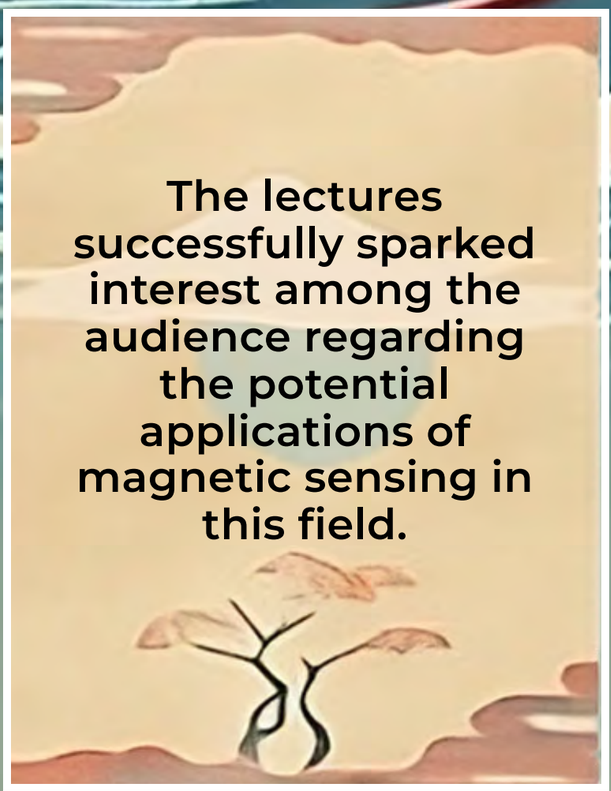
The first speaker, Professor Tadanori Goto from the University of Hyogo, delivered a talk titled "Marine Survey for Underground Mineral Resources."

He discussed the estimation of seafloor electrical property distribution near hydrothermal vents using magnetic and electric field sensors in the ocean

Additionally, he introduced sensing technology for monitoring sea level rise during tsunamis caused by earthquakes.

Professor Ronny Stolz from the Leibniz Institute of Photonic Technology in Germany, provided a review of magnetic sensing technology and presented a lecture on airborne resource survey utilizing a SQUID sensor towed by an aircraft

Following the presentations, the audience engaged in a lively Q&A session and actively exchanged information with the speakers.



The lectures successfully sparked interest among the audience regarding the potential applications of magnetic sensing in this field.

Lastly, I extend my gratitude to Prof. Yoichiro Tanaka, Secretary General of Intermag 2023 Conference, and the organizing committee for their financial and administrative support in making this session possible.

STUDENTS IN MAGNETISM @ INTERMAG 2023 CONFERENCE

by Hiroki Koizumi

The Student in Magnetism special session of Intermag 2023 Conference was held on May 19, 2023, at Hagi Hall, Sendai International Center (Japan). This session is a networking session hosted by Students in Magnetism (SiM) of the IEEE Magnetics Society.

by IEEE MAGNETICS

The purpose of this session is not only to connect young researchers, in particular students, with one another through the event but also to advertise the activities of the IEEE Magnetics Society to them.

There was an introduction of SiM, followed by several original networking games

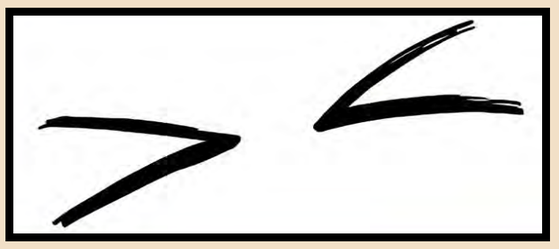
!!!

specially catered for the magneticians: a BINGO-like game, and another teamwork activity on building with a magnetic kit.

In the BINGO game, each bingo square was filled with a subject that could be filled by participants communicating with each other.

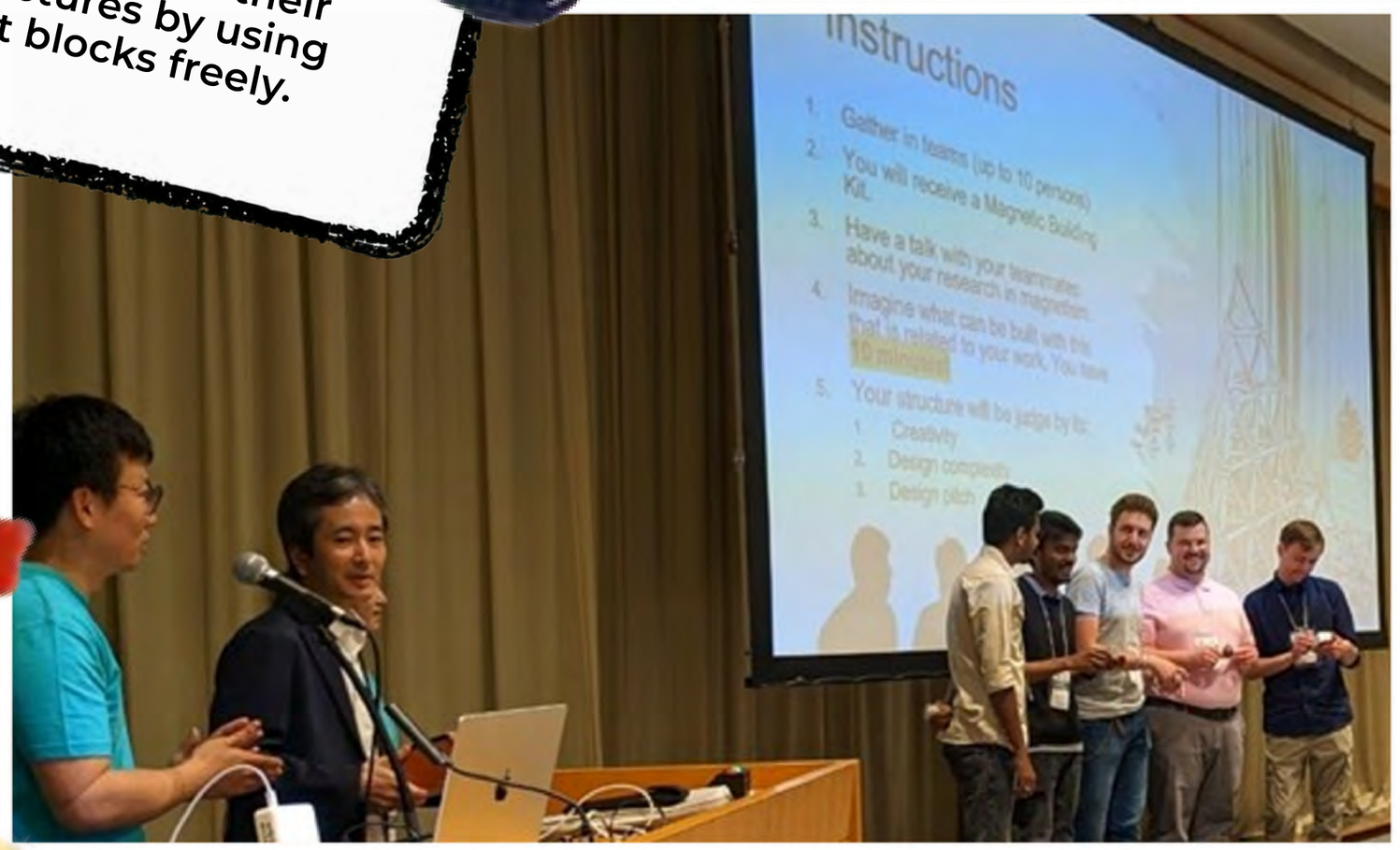
Are you an experimentalist ?

What is your research topic ?



The prizes were sent to the winners of BINGO game.

In the teamwork activity, participants make some groups and create their own structures by using magnet blocks freely.



The prizes were sent to most creativity groups.

It was a very meaningful session to make an opportunity to connect with young researchers all over the world. The total number of participants was approximately 100.

Organizers:

Local staff

Weida Yin,
Hiroki Koizumi,
Tomomi Suwa,
Xiaotong Ma,
Prof. Rie Umetsu, and
Prof. Atsufumi Hirohata

The
SiM Team:
May Inn Sim,
Maria Salvador,
Audre Lai

Affiliated supported by IEEE Magnetic Society

HAPPY 1ST ANNIVERSARY

STUDENTS IN MAGNETISM, THE YOUNGEST ENTITY OF THE IEEE MAGNETICS SOCIETY, CELEBRATES ITS FIRST ANNIVERSARY.

During this year, we have engaged young generations through fun and interactive activities related to magnetism.
Still, we have many plans to come,
so stay tuned!

WWW.STUDENTSINMAGNETISM.ORG

VIRTUAL COFFEE HOURS

join us

WE MEET IN OUR HEADQUARTERS IN GATHER TOWN... JOIN US TO DISCUSS MAGNETIC SCIENCE AND NOT-SO-SCIENTIFIC STUFF WHILE PLAYING FUN GAMES. FIND THE NEXT DATE ON OUR WEBPAGE.

https://www.studentsinmagnetism.org/virtual-coffee-hours

MagnetiSiM 23

MAKE SENSE OF YOUR SENSORS

Join this competition by unleashing your creativity to design innovative projects utilizing Hall sensors! Submit your projects for a chance to win from our impressive prize pool of $1500.

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High school students

Category II

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Apply for funding to obtain your starter kit!

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2 October 2023

HEY BUDDY!

As a graduate student, you can sign up to guide and answer scientific inquiries from participating groups.

BEST BUDDY AWARD $300

For further information, registration and questions

www.studentsinmagnetism.org

IEEE MAGNETICS

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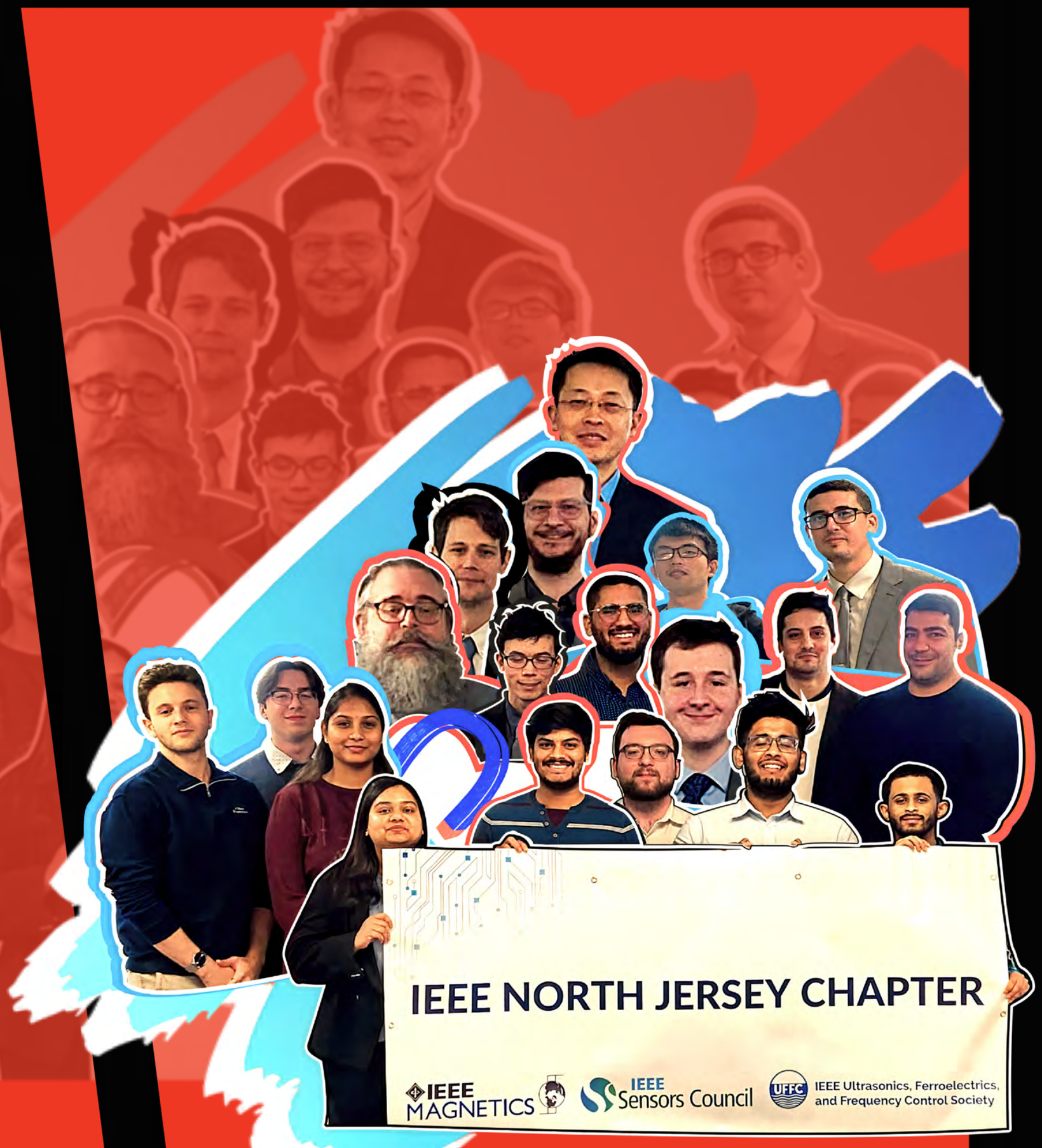
NEWS FROM

North Jersey Joint Chapter of MagSoc/ Sensors/UFFC

Submitted by Philip Pong
Standards Subcommittee Chair &
Northern New Jersey Chapter Chair
IEEE Magnetics Society



We are excited to share the success of the 1st North Jersey Research Student Conference, organized by the North Jersey Joint Chapter of MagSoc/Sensors/UFFC. This event on December 9, 2022, brought together a diverse group of participants, including postdoctoral researchers, Ph.D. candidates, master's and undergraduate students, as well as high school students, all eager to showcase their research and engage in valuable discussions.

Held at the Department of Electrical and Computer Engineering of the NJIT New Jersey Institute of Technology

in Newark, the conference provided an excellent platform for students and scholars

to present their work and gain insights from esteemed speakers. Notable speakers included Dr. Brian Fricke from Oak Ridge National Laboratory, who delivered a compelling plenary talk, and Dr. Panayiotis Moutis from Carnegie Mellon University, who delivered an inspiring keynote address. Additionally, the conference featured insightful invited talks from Dr. Abdellatif El Mouatamid of the New Jersey Institute of Technology and Adam Kemp from the Princeton International School of Mathematics and Science.

The conference focused on a wide range of research areas, such as energy, power, sensors, machine learning, smart cities, computing, and future research needs and directions. Presenters seized the opportunity to showcase their innovative research projects and share their latest findings. This platform allowed students to not only present their work but also engage in discussions, exploring the potential and challenges in their respective fields. The conference fostered an environment conducive to collaboration, encouraging scholars to connect and establish valuable partnerships.

During the event, exceptional presenters were recognized for their outstanding contributions. Best presentation awards and certificates of merit were bestowed upon these individuals, acknowledging their remarkable achievements in their respective fields of research.

Event website: https://web.njit.edu/~sa2564/studentconf.html

We eagerly look forward to future editions of this conference, as it continues to contribute to the advancement of research and academic excellence in our region.

CONFERENCE & SCHOOL CALENDAR

26th
Soft Magnetic Materials Conference (SMM26)
September 4 - 7, 2023
Prague, Czech Republic

The European School on Magnetism 2023 (ESM 2023)
September 3 - 15, 2023
Madrid, Spain

Spin Electronic and Nanomagnetism Colloquium (SPIN) 2023
August 30 - September 2, 2023
Nancy, France

Trends in MAGnetism 2023 (TMAG 2023)
September 4 - 8, 2023
Rome, Italy

2023 IEEE 13th International Conference Nanomaterials: Applications & Properties
September 10 - 15, 2023
Bratislava, Slovakia

Front Range Advanced Magnetics Symposium (FRAMS) 2023
September 16, 2023
Dever, CO, USA

SPIN ASIA 2023
September 24 - 29, 2023
Chiang Mai, Thailand

AtC-AtG 2023
September 27, 2023
Virtual

XII
Latin American Association of Magnetism (LAW3M)
October 16 - 20, 2023
Puerto Varas, Chile

IEEE Magnetics Society School (IMagsoc School) 2023
October 17 - 20, 2023
King Mongkut's Institute of Technology, Ladkrabang (KMITL), Ladkrabang, Thailand

68th Annual Conference on Magnetism and Magnetic Materials (MMM 2023)
October 30 - November 3, 2023
Dallas, USA

Dresden Days on Magnetocalorics 2023
November 13 - 14, 2023
Dresden, Germany

Petaspin 2023 School on "Spintronics: fundamentals and applications"
December 11 - 15, 2023
Messina, Italy

#F2EDE7

To list your conference/events in the Newsletter in a future edition, please contact the Editor.

THE FUTURE OF TIERED STORAGE –

TAPE OR HDD OR ?

Hybrid Meeting
On-line and In Person at Quadrant

September 14, 7:00pm – 8:00pm
Quadrant, 1120 Ringwood ct. San Jose, 92131

Social network and Refreshments will be available at 6.30 pm - 7.00pm.

Who: Fred Moore, President of Horison Information Strategies, will cover a potential new paradigm in storage technologies for hyperscale, enterprise and cloud deployment.

REGISTER HERE

For web details: https://scvmag.org/event/the-future-of-tiered-storage-tape-or-hdd-or/

IEEE Around-the-Clock Around-the-Globe (AtC-AtG) 2023

SEPTEMBER 27

24-hour non-stop virtual conference on magnetism

Highlights

- Talks and posters by students and post-doctoral researchers only
- Discussions with your favourite speakers at Gather.Town
- Best oral and poster presentation awards
- Cross-regional multi-disciplined networking opportunities
- Meme and Scientific Picture competitions
- Registration is **free & open to everyone!**

Invited Speakers

Asia Pacific

Shutaro Karube

Soogil Lee

Weiyao Zhao

Susmita Saha

Europe, Middle East, Africa

Diana Leitao

Miguel A. Ramos Docampo

Olga Miroshkina

Mohammed Cherif Kihal

Americas

Pedram Khalili

Diego Rosales

Radhika Barua

Sophie Morley

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info@atc-atg.org

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IEEE MAGNETICS

IEEE JxCDC: CALL FOR PAPERS

Journal on Exploratory Solid-State Computational Devices and Circuits

Special topic: Steep Slope Transistors for Energy-Efficient Computing & More

Focus:
Experimental progress, theory/modeling, Si, III-V, III-N, 2D semiconductors and heterojunctions, multiferroic and other material/device design approaches, 3-D integration, heterogeneous integration, processing, manufacturing

- Submission opens: **Jun 1, 2023**
- Submission deadline: **Sep 1, 2023**
- First Notification: **Oct 1, 2023**
- Revision Submission: **Oct 15, 2023**
- Final Decision: **Nov 15, 2023**
- Online Special Topic Publication: **Dec 1, 2023**

Guest Editor:
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Azad Naeemi, Georgia Institute of Technology, USA

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THE 8TH IEEE INTERNATIONAL CONFERENCE ON REBOOTING COMPUTING (ICRC) 2023 WILL BE HELD FROM...

DECEMBER 5-6, 2023

IN SAN DIEGO, CA, USA

This is the premier venue for forward-looking research across the computing stack, including novel materials, devices, circuits, algorithms, languages, system software, and system and network architectures. For more information, please visit https://icrc.ieee.org/.

Topics of Interest Include:

- Future Design Aspects for Computing
- Future Computing Paradigms
- Future Computing Use Cases and Prototypes
- Future Software and Applications

Final version of all accepted papers will be included in the Proceedings on IEEE-Xplore

- **Paper submissions due:**
  September 30, 2023 AoE (No Extensions)
- **Reviews due:**
  October 20, 2023 (AoE)
- **Author notification of acceptance:**
  October 25, 2023
- **Early registration deadline:**
  November 13, 2023
- **Hotel reservation deadline:**
  November 13, 2023
- **Final copies of papers due:**
  November 15, 2023

IEEE rebooting COMPUTING

ICRC grew out of the IEEE Rebooting Computing Initiative (RCI), which was founded in 2012 to catalyze rethinking of the computer at all levels of the technology stack. The Rebooting Computing community represents multiple IEEE Societies and Councils, and the membership in the technical community is over two thousand. For more information on the RCI please visit the Rebooting Computing Portal.

EVOLUTION

IEEE Life members CONFERENCE

Life Member Conference

April 14-16, 2024

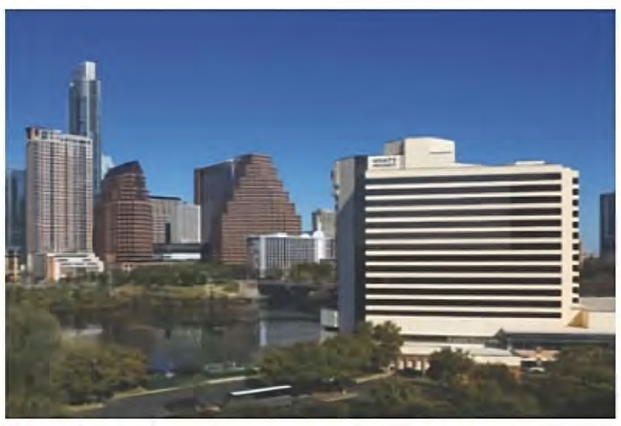
Hyatt Regency, Austin, TX

We are excited to announce the **inaugural Life Member Conference**, designed to strengthen the engagement of IEEE's 38,000 Life Members in shaping our collective future. Life Members represent all disciplines across the IEEE's fields of interest. We are also dedicated to giving back and sharing our expertise with the next generation.

The conference has **three tracks**:

1. **Emerging Technologies – that impact seniors**
   - ❖ Technologies of the Future and the Next Chapter
   - ❖ Aging Society and Technology Progress
   - ❖ Renewable Energy and Sustainability
2. **Applications – technologies used by aging populations**
   - ❖ Financial and Investment Strategies
   - ❖ Smart Systems, Infrastructure, Equipment and Living
3. **Contributions – members sharing resources with future leaders**
   - ❖ Mentors and Influencers in the Modern Society
   - ❖ Professional Development, Sharing and STEM Education

Our growing list of speakers include Rodney Brooks (iRobot), John McDonald (GE), Whurley (Strangeworks), Manuela Veloso (JP Morgan), Bernie Sander (AMD), Julie Shah (MIT) (and more!). Speaker commitments are ongoing and over the summer and fall, we'll have a large list of exciting and engaging speakers, keynotes and topics to share.



Join other Life Members, Senior Members, influencers, innovators, technical professionals, and members of the STEM community in Austin for this inaugural event. Registration will be limited, so be sure to secure your spot early.

Stay tuned for further details about the conference at https://life.ieee.org/news-events/ieee-life-member-conference and our social media channels.

The purpose of the Newsletter of the IEEE Magnetics Society is to publicize activities, conferences, workshops and other information of interest to Society members, sister societies and other people in the area of applied magnetics.

Contributions are solicited from Society and sister society members, Officers & other volunteers, conference organizers, local chapters, and other individuals with relevant material. The Newsletter is published quarterly on the Society website at: http://www.ieeemagnetics.org.

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