



**IEEE Magnetics Society Standards Committee (MG/SC)**

**4th General Meeting**

**27 Sep 2024**

10:30 AM EDT (7:30 AM San Francisco, 3:30 PM London, 8 PM Delhi India, 10:30 PM Taiwan - Hong Kong - Singapore - Beijing, 11:30 PM Tokyo)

*\*This meeting is recorded solely for the purpose of taking minutes. The recording will be destroyed after the minute is taken and approved in the next meeting.*

## Agenda

1. Call to Order (check quorum)
2. IEEE Policies (Patent, copyright and behavior participation slides)
3. Introduction and Affiliation Declarations
4. Approval of the Agenda
5. Approval of minutes of the previous meeting
6. Report from Chair
  - I. Magnetics Standards Summit 2024 (29 May 2024, 10 am – 12:45pm)
  - II. Manuscript progress from the Magnetics Standards Summit 2024
  - III. Working Group Policy and Procedure Document
  - IV. TCOS Seed Funding for Innovative Standards Efforts
7. Reports from Technical Subcommittee Chairs
  - a. Progress Updates of PARs (P3387, P3465) and Working Groups
8. Technical Subcommittee Officers (Term 2025 to 2026)
9. Open Forum Discussion (Magnetics Standards Summit 2025 and others)
10. Future meetings: 5<sup>th</sup> General meeting (17 January 2025, Friday, at the Joint MMM-Intermag Conference, New Orleans)
11. Adjourn



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# 1. Call to Order

## 29 Participants in the Previous Meeting on 29 Sep 2023

Philip Pong	Sidhant Tiwari
Daniel Gopman	Weigang Wang
Vijaysankar Kalappattil	Tom Thomson
Mingzhong Wu	Jia Yan Law
Ravi Hadimani	Yi Sui
Jan Kubik	Yumeng Yang
Sachiko Yamaguchi-Sekino	Denys Makarov
Michael Devine	Julieth Caro
Masahiro Yamaguchi	Cindi Dennis
Alina Deac	David Lowther
George Slama	Cristina Gomez Polo
Sanjeev Gautam	Goran Karapetrov
Masahiko Nakayama	Vipul Sharma
Chuanpu Liu	Malia Zaman
Philip Keller	



# 1. Call to Order



Chair  
**Philip Pong**  
New Jersey Institute of Technology



Vice-Chair  
**Daniel Gopman**  
National Institute of Standards and Technology



Secretary  
**Vijaysankar Kalappattil**  
Northeastern University



Senior Program Manager  
**Malia Zaman**  
IEEE Standards Association

- IEEE SA Patent Policy
- IEEE SA Copyright Policy

# Technical Subcommittees

## Spintronics & recording

Chair: Weigang Wang, University of Arizona, USA

Vice Chair: Gen Yin, Assistant Professor, Georgetown University, USA

Secretary: Nilesh Gharia, Numem, USA

## Power, energy, machine, and environment (Yunpeng Zhang, Shanghai University)

Chair: Yunpeng Zhang, Shanghai University, China

Vice Chair: Joao Filipe Horta Belo da Silva, Universidade do Porto, Portugal

Secretary: Yacine Amara, University of Le Havre, France

## Sensors, communications, instrumentation, and measurement

Chair: Philip Keller, Metrolab Technology, Switzerland

Vice Chair: Sidhant Tiwari, Sandia National Laboratories, New Mexico, USA

Secretary: Mahmoud Rasly, Central Metallurgical Research and Development Institutes, Egypt

## Materials and phenomena

Chair: Michael Devine, Adams Magnetic Products, USA

Vice Chair: Jiayan Law, University of Seville, Spain

Secretary: Sanjeev Gautam, Panjab University, Chandigarh, India

## Bio, interdisciplinary, and emerging topics

Chair: Cindi Dennis, National Institute of Standards and Technology, USA

Vice Chair: Montserrat Rivas, University of Oviedo, Spain

Secretary: Yuko Ichiyanagi, Yokohama National University, Japan

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# PARTICIPANTS HAVE A DUTY TO INFORM THE IEEE

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- Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
- Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

**Early identification of holders of potential  
Essential Patent Claims is encouraged**



# WAYS TO INFORM IEEE

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- Cause an LOA to be submitted to the IEEE SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or
- Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
- **Speak up now and respond to this Call for Potentially Essential Patents**

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair

# OTHER GUIDELINES FOR IEEE WORKING GROUP MEETINGS

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- All IEEE SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
  - Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
  - Don't discuss specific license rates, terms, or conditions.
    - Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
    - Technical considerations remain the primary focus.
  - Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
  - Don't discuss the status or substance of ongoing or threatened litigation.
  - Don't be silent if inappropriate topics are discussed. Formally object to the discussion immediately.

-----  
For more details, see *IEEE SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at <http://standards.ieee.org/develop/policies/antitrust.pdf>

# PATENT-RELATED INFORMATION

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The patent policy and the procedures used to execute that policy are documented in the:

- ***IEEE SA Standards Board Bylaws***  
(<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>)
- ***IEEE SA Standards Board Operations Manual***  
(<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>)

Material about the patent policy is available at  
<http://standards.ieee.org/about/sasb/patcom/materials.html>

**If you have questions, contact the IEEE SA  
Standards Board Patent Committee  
Administrator at [patcom@ieee.org](mailto:patcom@ieee.org)**

# IEEE SA COPYRIGHT POLICY

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**NOVEMBER 2019**



# IEEE SA COPYRIGHT POLICY

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**By participating in this activity, you agree to comply with the IEEE Code of Ethics, all applicable laws, and all IEEE policies and procedures including, but not limited to, the IEEE SA Copyright Policy.**

- Previously Published material (copyright assertion indicated) shall not be presented/submitted to the Working Group nor incorporated into a Working Group draft unless permission is granted.
- Prior to presentation or submission, you shall notify the Working Group Chair of previously Published material and should assist the Chair in obtaining copyright permission acceptable to IEEE SA.
- For material that is not previously Published, IEEE is automatically granted a license to use any material that is presented or submitted.

# IEEE SA COPYRIGHT POLICY

- The IEEE SA Copyright Policy is described in the IEEE SA Standards Board Bylaws and IEEE SA Standards Board Operations Manual
  - IEEE SA Copyright Policy, see
    - Clause 7 of the IEEE SA Standards Board Bylaws  
<https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7>
    - Clause 6.1 of the IEEE SA Standards Board Operations Manual  
<https://standards.ieee.org/about/policies/opman/sect6.html>
  
- IEEE SA Copyright Permission
  - <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/permissionltrs.zip>
  
- IEEE SA Copyright FAQs
  - <https://standards.ieee.org/faqs/copyrights/>
  
- IEEE SA Best Practices for IEEE Standards Development  
[http://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/best\\_practices\\_for\\_ieee\\_standards\\_development\\_051215.pdf](http://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/best_practices_for_ieee_standards_development_051215.pdf)
  
- Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)
  - <https://standards.ieee.org/about/policies/opman/sect6.html>

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Could everyone please introduce yourself (as well for our records) by:

Chat box - First Name, LAST NAME, affiliation, email address

Alternatively, you can also send your details and email address to the Vijay

Vijaysankar Kalappattil <[v.kalappattil@northeastern.edu](mailto:v.kalappattil@northeastern.edu)>

Attendance record is important because one has to attend at least 2 out of 4 recent meetings in order to retain voting right.



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## 5. Approval of minutes of the previous meeting

<https://ieeemagnetics.org/standing-committees/standards-committee-roster>

### Standards Committee Meeting - Sep 29, 2023

Sep 29, 2023 at 10:30am EST (7:30am San Francisco, 3:30pm London, 8pm Delhi India, 10:30pm Taiwan - Hong Kong - Singapore - Beijing, 10:30pm Tokyo)

<https://njit.webex.com/njit/j.php?MTID=mdf2fdfaeeb6b1886761a16fdca05caa5>

#### Agenda:

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5. Report from Chair
6. Officers appointment of Technical Subcommittees
7. Technical topics and mission statement of Technical Subcommittees
8. Work scope and future actions of Technical Subcommittees
9. Consideration of Project Authorization Request (PAR) Forms
10. Discussion(s)
11. New business
12. Future meetings
13. Adjourn



Working Group Policies and Procedures



View Document  
PDF 432.9 KB



Draft Meeting Minutes for the General Meeting on 29 September 2023



View Document  
PDF 136.3 KB

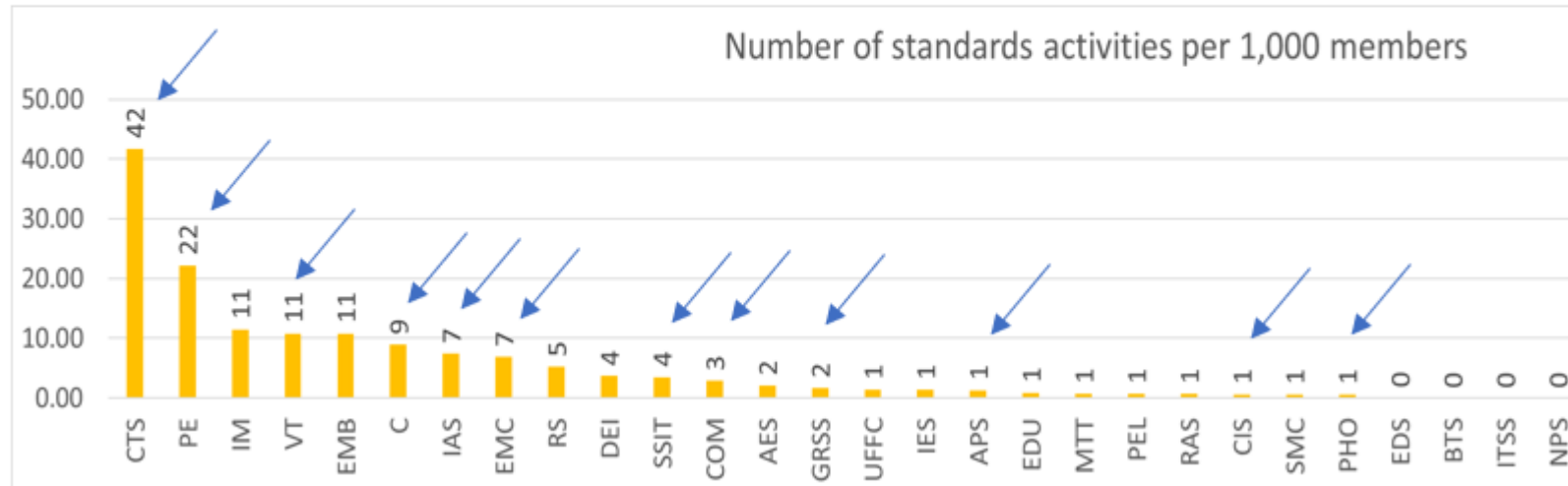


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## Standards Activities levels per Society/Council as of May 2021



Most standards active societies: Consumer Technology Society (CTS), Power and Energy Society (PES), Instrumentation and Measurement Society (IMS), Vehicular Technology Society (VTS), Engineering in Medicine & Biology (EMBS), Computer Society (CS). We can learn from them.

Responsibilities of Standards Committee (some examples):

- Oversee and coordinate the standards development of the IEEE Magnetics Society
- Make decisions on the standards documents by voting (e.g. P3387, P3465)
- Bring colleague up-to-date with the latest technology and product development (e.g. Magnetics Standards Summit)

**Brief Summary of IEEE Standards Development Process:** The development of an IEEE standards begins with a PAR (Project Authorization Request) form. After the PAR is approved, a Working Group can be formed to draft the standard document. Finally, the draft standard document will be balloted by the IEEE Standards Association. If approved, it becomes an official IEEE Standard. So it all starts with a PAR.

### **Steps of Initiating a PAR:**

1. Join IEEE Standards Association as an individual member (one has to be an IEEE SA member in order to be able to access the IEEE MyProject and submit a PAR to the IEEE SA). It is \$68 per year to be a IEEE SA member.
2. At the IEEE MyProject portal, there is a place where you can submit a PAR for consideration. Attached are the PAR3387 that I submitted. You can see what you need to fill in for a PAR proposal. It is not a very long form.
3. One of the questions the PAR form asks if which IEEE Society you think is the most related Society to sponsor your PAR. If you fill in Magnetics Society, then your PAR will come to the Standards Committee of the Magnetics Society.
4. Our committee will then assign it to the corresponding Technical Subcommittee to discuss and vote on endorsement.
5. If the PAR is approved by the MagSoc Standards Committee, then it will be further submitted to the IEEE SA New Standards Committee for consideration.
6. If approved, then you can form a working group to start working on the standards document.

# Magnetics Standards Summit

## Before Summit                      During Summit

## After Summit

*TS fix dates for kick-off meeting.  
Standards Committee announce  
through MagSoc, IEEE channels,  
and personal contacts*

TS members prepare ideas and materials for presentation

TS call for meeting to consolidate all its ideas. Each TS will have its own scribe and work on the consolidation at the TS level.

TS representatives to make presentations

Discussion session: summit participants can participate and input insights and suggestions

Chief scribe will jot down notes during the summit

Chief scribe, TS scribes, and Standards Committee officers will work together to write up a manuscript based on all the presentation materials and discussions

Manuscript submission to IEEE Transactions on Magnetics

TS – Technical Subcommittee

## 6. Report from Chair - Magnetics Standards Summit 2024

Magnetics Standards Summit 2024 ( 29 May 2024, 10 am - 12:45 pm, EDT)

- The number of registrations on google form: **82**
- The number of people shown up on Zoom: **48**
- There were presentations from each Technical Subcommittee and also open discussion. There was also a panel forum.
- Presentation contents, comments, and discussion are being written up into a manuscript to be submitted to IEEE Trans Magn.

The screenshot displays a Zoom meeting interface. The main window shows a grid of 20 participants in a 4x5 layout. The participants are: Mingzhong Wu, Philip Pong, joah, Peter Fischer, Robert Fagaly/TAB CoS, YACINE AMARA, Vijay Kalappattil, Pan Gopman (NIST), Weigang Wang, Gary Hoffman, Philip Keller, Sanjeev Gautam, Mahmoud Rasly, Yunpeng Zhang, Susana Isabel Freitas, Yuko Ichyanagi, M. Nakayama Kioxia, Gen Yin, JC Sun Bs&T, Ron Goldfarb, Pintu, Mateusz Osinski, vipulsharma, Michael Devine, and Alonso Campos. A notification at the top indicates 'Mingzhong Wu raised hand'. On the right, a 'Participants (42)' list shows names and icons for mute and video. Below that, a chat window for 'Magnetics Standards Summit [IEEE Magneti...]' shows messages from Dr. Proloy Taran Das, M. Nakayama Kioxia, and Cindi Dennis. The bottom toolbar includes controls for Unmute, Stop Video, Security, Participants (42), Q&A, Chat, Share Screen, Start Summary, AI Companion, Pause/stop recording, Reactions, Apps, Whiteboards, Notes, More, and End.



## 6. Report from Chair – Manuscript Progress

1. Presentation from each Technical Subcommittee, the technical discussion after each presentation, and the panel forum discussion were summarized by Philip/Daniel/Vijay.
2. The summaries were reviewed and supplemented by each TS.
3. The summaries of the five TSs and the writeup from the panel discussion are now being integrated into a manuscript.
4. Problem: no figures, all text
5. First draft to be ready by November for review by the TSs and major participants of the Summit.

## 6. Report from Chair – WG PnP Document

- Working Group Policies & Procedures (PnP) Document was approved by the Magnetics Society Standards Committee on 29 July 2024.
- Currently its review by the IEEE Standards Association is close to completion.
- The latest status is “Conditionally Deem without Issue”. Just minor issue remaining.

### Call for Proposal: TCOS Seed Funding for Innovative Standards Efforts - Round 14

- The IEEE Technical Activity Board Committee on Standards (TCoS) call for seed funding opportunities that initiate innovative standards efforts.
- We submitted proposal in Round 12 and Round 13 but not succeeded. The main reason is the reviewers were considering MagSoc Standards Committee as a well-established one like the Power and Energy Society (PES), Instrumentation and Measurement Society (IMS), and Vehicular Technology Society (VTS).
- I reflected this issue during the TCoS meeting. They now offer priority to S/C with no prior standard activities.
- We will submit a proposal (~\$19800) to the TCoS again on 30 Sep 2024. The proposal is to support five co-located workshops and two PAR working groups.

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## 7. Report from Technical Subcommittee

### Spintronics & recording

Chair: Weigang Wang, University of Arizona, USA

Vice Chair: Gen Yin, Assistant Professor, Georgetown University, USA

Secretary: Nilesh Gharia, Numem, USA

### Power, energy, machine, and environment (Yunpeng Zhang, Shanghai University)

Chair: Yunpeng Zhang, Shanghai University, China

Vice Chair: Joao Filipe Horta Belo da Silva, Universidade do Porto, Portugal

Secretary: Yacine Amara, University of Le Havre, France

### Sensors, communications, instrumentation, and measurement

Chair: Philip Keller, Metrolab Technology, Switzerland

Vice Chair: Sidhant Tiwari, Sandia National Laboratories, New Mexico, USA

Secretary: Mahmoud Rasly, Central Metallurgical Research and Development Institutes, Egypt

### Materials and phenomena

Chair: Michael Devine, Adams Magnetic Products, USA

Vice Chair: Jiayan Law, University of Seville, Spain

Secretary: Sanjeev Gautam, Panjab University, Chandigarh, India

### Bio, interdisciplinary, and emerging topics

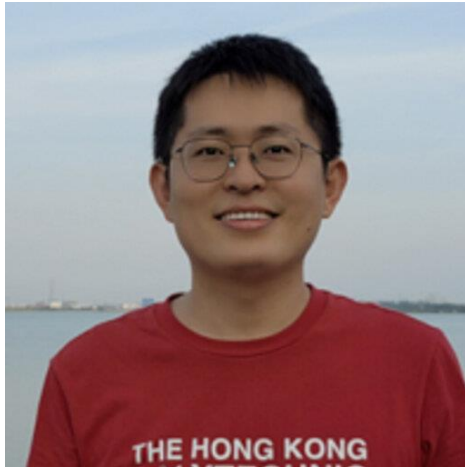
Chair: Cindi Dennis, National Institute of Standards and Technology, USA

Vice Chair: Montserrat Rivas, University of Oviedo, Spain

Secretary: Yuko Ichiyanagi, Yokohama National University, Japan



**Power, energy, machine, and environment**



Chair: **Yunpeng Zhang**,  
Shanghai University, China



Vice Chair: **Joao Filipe Horta Belo da Silva**,  
Universidade do Porto, Portugal



Secretary: **Yacine Amara**,  
University of Le Havre, France

## Power, energy, machine, and environment

we are crafting the questionnaire for the raised topics. The questionnaire for "the development of standardized test methods for assessing the losses and efficiency of electric drive systems" is created with google docs with the link: <https://forms.gle/b4Gcim2PCLrN6ZwGA>.

### Assembling of a **working group** on the development of standardized test methods for **assessing the losses and efficiency of electric drive systems**

We are the "Power, energy, machine, and environment Subcommittee" technical

subcommittee of IEEE Magnetics Standards subcommittee -

<https://ieeemagnetics.org/standards-committee-roster/technical-subcommittee>.

This

survey aims to gather insights and contributions from industry peers on **the development of standardized test**

**methods for assessing the losses and efficiency of electric drive systems.**

Your expertise and feedback are invaluable to shaping future standards in this field.

philip.pong@gmail.com [Switch account](#)



Not shared

Are you interested in participating in this working group?

*If so, please respond to the questions below.*

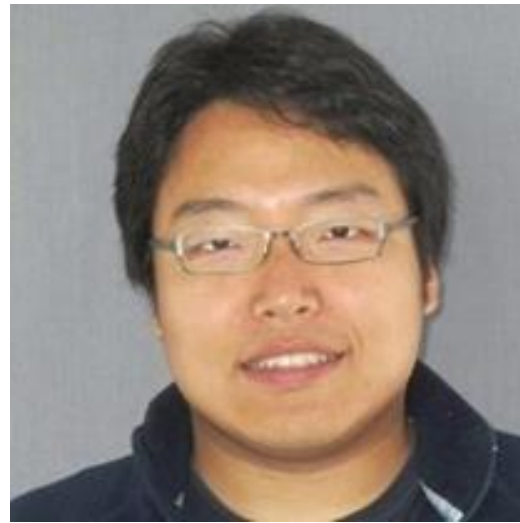
Yes

No

## Spintronics and Recording



Chair: **Weigang Wang**,  
University of Arizona, USA



Vice Chair: **Gen Yin**,  
Georgetown University, USA



Secretary: **Nilesh Gharia**,  
Numem, USA

**2.1 Project Title:** Standard for Magnetoresistive Immunity Verification of Magnetoresistive Random Access Memory

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**3.1 Working Group:** P3465 Developing Magnetic Immunity Standards for Magnetic Random Access Memory(MS/MagSoc-SC/P3465 Magnetic Immunity)

**3.1.1 Contact Information for Working Group Chair:**

**Name:** Daniel Gopman

**Email Address:** daniel.gopman@nist.gov





# IEEE Magnetics Society Standards Committee Spintronics and Recording Subcommittee meeting

*Weigang Wang, University of Arizona*

*Gen Yin, Georgetown University*

*Nilesh Gharia, Numem*



**IEEE  
MAGNETICS**



**IEEE**  
*Advancing Technology  
for Humanity*

*Sept 26, 2024*

# Agenda

- ▶ List of presence: type name and affiliation in the chat box
- ▶ Approve the agenda
- ▶ Current activities in this subcommittee
- ▶ New ideas for standard projects?

# Current effort in Spintronics & Sensor subcommittee

## MRAM magnetic immunity

- Jack Guedj (NuMem), Daniel Worledge (IBM), Bernard Dieny (Spintec) and many other industry and academic stakeholders.
- A standard is being developed.
- A paper is accepted by IEEE Electron devices magazine.

### Impact of external magnetic fields on STT-MRAM

Bernard Dieny<sup>1</sup>, Sanjeev Aggarwal<sup>2</sup>, Vinayak Bharat Naik<sup>3</sup>, Sebastien Couet<sup>4</sup>, Thomas Coughlin<sup>5</sup>, Shunsuke Fukami<sup>6,7</sup>, Kevin Garelo<sup>1</sup>, Jack Guedj<sup>8</sup>, Jean Anne C. Incorvia<sup>9</sup>, Laurent Lebrun<sup>10</sup>, Kyung-Jin Lee<sup>11</sup>, Daniele Leonelli<sup>12</sup>, Yonghwan Noh<sup>13</sup>, Siamak Salimy<sup>10</sup>, Steven Soss<sup>3</sup>, Luc Thomas<sup>14</sup>, Weigang Wang<sup>15</sup>, and, Daniel Worledge<sup>16</sup>

1. Univ. Grenoble Alpes, CEA, CNRS, SPINTEC, 38000 Grenoble, France

2. Everspin Technologies, 5670 W Chandler Blvd Suite 130, AZ 85226, USA

3. GlobalFoundries, 400 Stone Break Rd Extension, Malta, NY 12020, USA

4. Imec, 3001 Leuven, Belgium

5. Coughlin Associates, Atascadero, California, USA

6. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, 6-6-01, Katahira, Sendai 980-8577, Japan

## Project Authorization Request (PAR)

- Dan Gopman started leading the work group in April 2024
- Revised PAR submitted by Dan Gopman in May 2024
- WG meeting conducted on Sept. 10, 2024

# New ideas collected

Several exciting areas where new standards may be needed:

- Cryogenic MRAM performance characterization and benchmark.
- Neuromorphic or probabilistic computing performance standard using spin-torque oscillators.
- MRAM performance evaluation in extreme conditions.

# Thanks!



## Materials and Phenomena



Chair: **Michael Devine**, Adams  
Magnetic Products, USA



Vice Chair: **Jiayan Law**,  
University of Seville, Spain

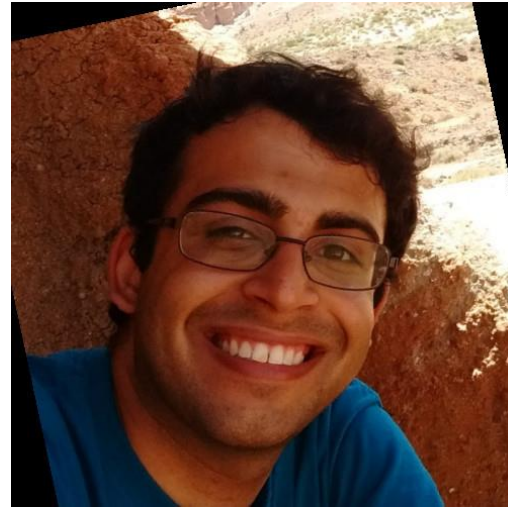


Secretary: **Sanjeev Gautam**,  
Panjab University, Chandigarh,  
India

**Sensors, communications, instrumentation, and measurement**



Chair: **Philip Keller**, Metrolab Technology, Switzerland



Vice Chair: **Sidhant Tiwari**, Sandia National Laboratories, New Mexico, USA



Secretary: **Mahmoud Rasly**, Central Metallurgical Research and Development Institutes, Egypt

**2.1 Project Title:** Guide for Conducting Contactless Current Measurement for High-Voltage (4.76 kV to 800 kV) Multi-Phase Multi-Core Power Cables Based on Magnetic Field Sensing

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**3.1 Working Group:** P3387 Contactless current measurement for multi-phase multi-core power cables (MS/MagSoc-SC/CCMPPMC)(MS/MagSoc-SC/MS/MagSoc-SC/CCMPPMC/P3387)

**3.1.1 Contact Information for Working Group Chair:**

**Name:** Wing Tat Pong

**Email Address:** philip.pong@njit.edu



# Sensors Subcommittee Status

*IEEE Magnetics Society Standards Committee General Meeting*

*September 27, 2024*



# Sensors Subcommittee Status (1/4)

*Activities since last Standards Committee General Meeting, September 2023*

- ▶ Magnetics Standards Summit May 29, 2024
  - Kickoff meeting March 5, 2024; 2 progress meetings April 15 and April 30
  - E-mail questionnaire to personal contacts and registered Magnetic Standards Summit participants
  - Publicly accessible Summary of responses and Bibliography (Google documents on Google Drive)
  - Extract common denominators from responses => 3 proposals
  - Review draft manuscript
- ▶ Ordinary status meeting May 7, 2024
  - Approve PAR P3387, “Guide for Conducting Contactless Current Measurement [...]” (Philip Pong)
  - Preparation for Summit
- ▶ Ordinary status meeting September 6, 2024
  - Next steps for 3 proposals
  - Status update PAR P3387

# Sensors Subcommittee Status (2/4)

## *Magnetic Sensors Symposium at INTERMAG2024 in Rio*

- ▶ Franziska Weickert, Physikalisch-Technische Bundesanstalt (PTB, Germany), "Primary Tesla standards and magnetic calibration chains".
- ▶ Susana Cardoso de Freitas, Universidade de Lisboa (Portugal), "Low field and small footprint room temperature field sensors compatible with CMOS semiconductor integration".
- ▶ Sergio Moltó González, Centro Español de Metrología (CEM, Spain), "Magnetic measurement system and environmental magnetic field compensation at CEM".
- ▶ Mahmoud Rasly Khoudary Eldesouky, Central Metallurgical Research and Development Institutes (Egypt), "Tunable TMR sensors with magnetically-engineered – order/disorder – sensing layers".
- ▶ Yevhen Zabala, Helmholtz-Zentrum Dresden-Rossendorf (HZDR, Germany), "Flexible, printed and eco-sustainable magnetic field sensors".
- ▶ Stuart Harmon, National Physical Laboratory (NPL, U.K.), "Characterisation of magnetic sensors for space applications – an NMI perspective".
- ▶ Philip Keller, Metrolab Technology SA, Geneva, Switzerland, Session Chair



# Sensors Subcommittee Status (3/4)

## *Next Steps for 3 Summit Proposals*

### ▶ Performance characterization

- Focus: guideline / checklist for researchers, to ensure valid comparisons of new sensors
- Denys Makarov leads on drafting a PAR, with participation of co-authors of Summit proposal
- Target date: November

### ▶ Magnetic Measurement Instrumentation

- Compare proposal to existing standards and clarify / narrow the scope accordingly
- Might focus on new materials, such as thin films and 2D magnets
- Sidhant Tiwari leads, with participation of Denys Makarov and George Slama

### ▶ Reference Magnets

- Clarified intent: complete magnet system; e.g. electromagnet, power supply, and NMR sensor as reference
- Philip Keller leads on drafting a PAR, with input especially from national metrological institutes
- Target date: end of year

# Sensors Subcommittee Status (4/4)

## *Personnel changes*

- ▶ New subcommittee member: Takahide Kubota, Tohoku University, Japan
  - Expertise: development of TMR sensors with  $< 1$  pT detectivity; collaboration with sensor-device startup
  - Participate in “Performance characterization” project
  - WELCOME!
  
- ▶ Resignation: Pavel Ripka, Czech Technical University
  - Due to upcoming retirement
  - Co-author of “Performance characterization” proposal; instigator of bibliography project
  - Found replacement: Michal Janošek, from same department
  - THANK YOU and WELCOME!
  
- ▶ Upcoming resignation of chair: Philip Keller, Metrolab Technology SA, Geneva, Switzerland
  - End of two-year term and retirement January 2024
  - Succession by vice-chair, Sidhant Tiwari, is uncertain due to job change
  - Target date to find a solution: early 2025
  - IT’S BEEN GREAT – THANK YOU!

**Bio, interdisciplinary, and emerging topics**



Chair: **Cindi Dennis**,  
National Institute of  
Standards and Technology,  
USA



Vice Chair: **Montserrat Rivas**,  
University of Oviedo, Spain



Secretary: **Yuko Ichiyanagi**,  
Yokohama National University,  
Japan

## Agenda

1. Call to Order (check quorum)
2. IEEE Policies (Patent, copyright and behavior participation slides)
3. Introduction and Affiliation Declarations
4. Approval of the Agenda
5. Approval of minutes of the previous meeting
6. Report from Chair
  - I. Magnetics Standards Summit 2024 (29 May 2024, 10 am – 12:45pm)
  - II. Manuscript progress from the Magnetics Standards Summit 2024
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7. Reports from Technical Subcommittee Chairs
  - a. Progress Updates of PARs (P3387, P3465) and Working Groups
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10. Future meetings: 5<sup>th</sup> General meeting (17 January 2025, Friday, at the Joint MMM-Intermag Conference, New Orleans)
11. Adjourn





## 8. Technical Subcommittee Officers

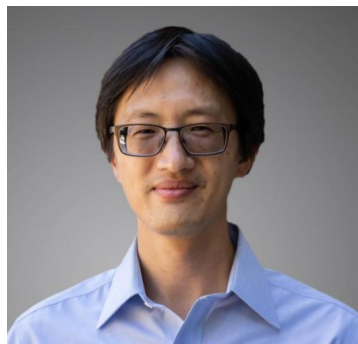
Thank you very much for the contribution of all the founding TS Officers (2023 – 2024)

Chair: **Cindi Dennis**, National Institute of Standards and Technology, USA



Secretary: **Yuko Ichiyanagi**, Yokohama National University, Japan

Vice Chair: **Montserrat Rivas**, University of Oviedo, Spain



Chair: **Weigang Wang**, University of Arizona, USA



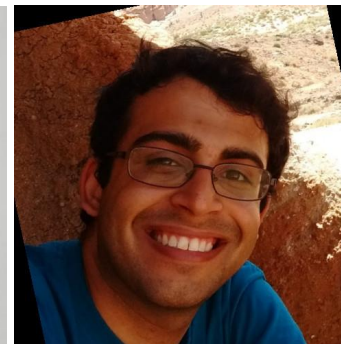
Vice Chair: **Gen Yin**, Georgetown University, USA



Secretary: **Nilesh Gharia**, Numem, USA



Chair: **Philip Keller**, Metrolab Technology, Switzerland



Vice Chair: **Sidhant Tiwari**, Sandia National Laboratories, New Mexico, USA



Secretary: **Mahmoud Rasly**, Central Metallurgical Research and Development Institutes, Egypt



Chair: **Michael Devine**, Adams Magnetic Products, USA



Vice Chair: **Jiayan Law**, University of Seville, Spain



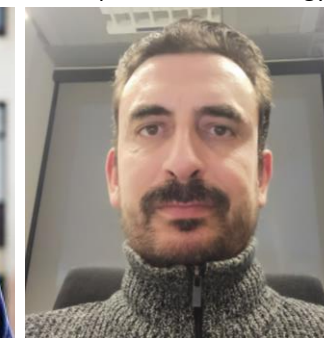
Secretary: **Sanjeev Gautam**, Panjab University, Chandigarh, India



Chair: **Yunpeng Zhang**, Shanghai University, China



Vice Chair: **Joao Filipe Horta Belo da Silva**, Universidade do Porto, Portugal



Secretary: **Yacine Amara**, University of Le Havre, France

- Candidates who are interested to take up these roles for 2025 – 2026, please fill in this simple Google Form:

<https://forms.gle/zgZ5TxbhnnTcAN7B6>



- Magnetics Society members will have priority.
- This call will be broadcast through Magnetics Society mailing list.



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## 9. Open Forum Discussion

1. Any suggestions or comments for Magnetics Standards Summit 2025?
2. Any candidates for TS Officers?
3. Any other thoughts?

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## 10. Future meetings: 5th General meeting

- 17 January 2025, Friday, at the Joint MMM-Intermag Conference, New Orleans
- Venue and Time (TBC)



The 16th Joint Conference on Magnetism and Magnetic Materials and Intermag

*Sponsored jointly by AIP Publishing and the IEEE Magnetics Society*

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This slide deck will be uploaded to the Standards Committee website:

<https://ieemagnetics.org/standing-committees/standards-committee-roster>

Thank you very much for attending the 4<sup>th</sup> General Meeting of the IEEE Magnetics Society Standards Committee.

We look forward to seeing you in the 5<sup>th</sup> General Meeting on 17 January 2025, Friday, at the Joint MMM-Intermag Conference, New Orleans.

