2025 IEEE INTERNATIONAL SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY, SIGNAL & POWER INTEGRITY

WWW.EMC2025.ORG

#IEEE_ESP25

TC-8 Annual Meeting

19 August 2025

Welcome!

To the annual meeting of the Institute of Electrical and Electronics Engineers (IEEE) Electromagnetic Compatibility (EMC) Society **Technical Committee on Aeronautics & Space EMC** (TC-8) Meeting on Tuesday, August 19th, 2025, in Raleigh, NC.

Our official website is TC 8 – Aeronautics and Space EMC – EMC Society

Find us on LinkedIn at https://www.linkedin.com/groups/8685221

All members and interested parties are welcome!

TC-8 Leadership

Chair: **Randy Jost**

- Adjunct Professor at Utah State University

Vice Chair: **Nika Amralah**

- RF Analysis Group Lead at the Canadian Department of National Defence

Secretary: **Stephanie Zajac**

- Lead Radiation Effects Engineer at The Johns Hopkins University Applied Physics Laboratory

Agenda

- Virtual Meeting Mechanics
- Scope of TC-8 (charter, roles & responsibilities)
- Membership:
  - Current Officers
  - Officer at Large Role and Nominations
  - Roundtable Introductions
- News & Activities
- Elections
- Future Work
- New Business
- Open Discussion

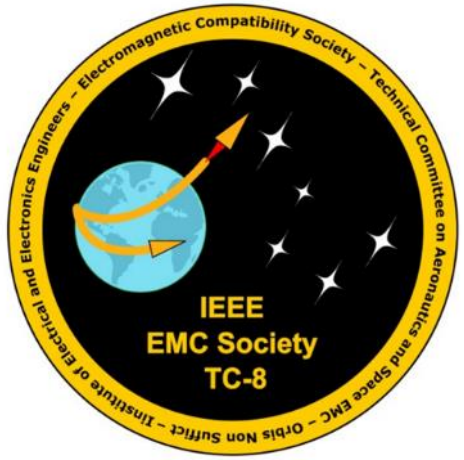
Hybrid-Virtual Meeting

- Secretary will monitor meeting chat for raised hands, questions, and any technical issues
- For in person attendees: An attendance sheet will be circulated
- For online attendees: Please send an email to Secretary (ieee.emc.tc8@gmail.com) so we can get an accurate attendee count
  - Include both your NAME and your ORGANIZATIONAL AFFILIATION

About TC-8

RALEIGH, NC
EMC+SIPI 2025

TC-8 Charter



- Technical Committee on Aeronautics & Space EMC
  - Encompasses aircraft, spacecraft & space launch vehicles, robotic and crewed
  - At the part, board, box, system, multi-system, planetary and interplanetary levels

- The aerospace environment provides unique EMC challenges in the design, development, test and operation of space systems
  - The harshness of the atmospheric, launch and space environments differ from traditional terrestrial projects

TC-8 Scope

This committee:

1. Is a resource for the EMC Society Board of Directors on all Aeronautics and Space EMC matters
2. Initiates and/or contributes to standards activity in our technical area
3. Monitors and informs the larger membership of new developments in our technical area

TC-8 Scope – Annual Symposium

1. Helps recruit authors for papers, poster papers as well as articles for our society's journal and newsletter
2. Organizes special sessions of invited papers and workshops
3. Provides subject matter experts to review papers submitted for publication
4. Provides subject matter experts for discussion panel sessions

Commitment to Diversity and Young Professionals

- TC-8 has been a groundbreaker on this and will continue to try to be
- Officer-at-Large program
  - Diverse membership and leadership
  - Openness to new ideas
- TC-8 remains committed to encouraging and supporting the participation of all its members of all backgrounds
  - Unique voices strengthen the Society and the greater IEEE community
  - If you need support, advice, or help of any kind, we're here for you!

Membership

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TC-8

Introduction: TC-8 Officers

Chair: Randy Jost	**Vice-Chair:** Nika Amralah	**Secretary:** Stephanie Zajac
Officers-at-Large:		
Paul Bremner	Clifton Courtney	Jen Dimov
Harry Hodes	Charles Jullien	Yusuf Ulas Kabukcu
Patrick Koch	John Kraemer	Terry Lantz
Dennis Lewis	Jim Lukash	John McCloskey
Phillip Miller	Alessandro da Rocha Mordente	Nathan Moyer
Ross Myrehn	Daren Nerad	Fin O'Connor
Noel B. Sargent	Ashton Schessler	Melissa Schwager
Bob Scully	Chris Selinsky	Andrew Shyne
Manny Soriano	Gabriel Vasquez Ramos	-

Officer-at-Large (OaL) Role

- OaLs may be nominated (or self-nominate) every year
- There is no limitation on the number of OaLs
- OaLs participate in meetings in a non-voting capacity
- Great opportunity to learn about the roles of the voting officers

OaL responsibilities:

1. Participate in annual symposium paper reviews
2. Attend meetings (when possible)

OaL Expectations

You must satisfy the following criteria to be considered an active OaL:

1. Attend > 50% of OaL meetings per year (monthly meetings)

OR

2. Participate in TC-8 activities, for example:
   - Respond to the call for paper reviews
   - Be involved in standards development
   - Submit a paper, or be a speaker at the IEEE EMC Symposium
   - Generate EMC Certification Exam questions

Appointments: Officer-at-Large

- Would you like to self-nominate as an OaL?

- Please be sure to indicate your interest in the attendance sheet or by email (ieee.emc.tc8@gmail.com) so that we can be in touch

Round Table Introductions

- In the Room -
Introduce yourself: Name, Affiliation

- Online -
Watch the chat for order in which to “unmute”
Introduce yourself: Name, Affiliation

2025 News & Activities

RALEIGH, NC

EMC+SIPI 2025

IEEE EMC Society TC-8

2025 IEEE EMC Symposium Activities

TC-8 Sponsored Activity	Description	Date, Time & Location
Annual Meeting	All member meeting (in-person/virtual)	Tuesday Aug. 19, 12:00 PM-1:00 PM, 302B
Technical Paper Session (Joint with TC-4)	*Novel Approach to Spacecraft System Level Magnetic Test* (NASA JPL)	Tuesday Aug. 19, 1:30 PM-5:00 PM, 305B
Hardware Demonstration: Time Domain vs. Frequency Domain	Explores the Fourier Transform and Fourier Series Expansions followed by measurements of representative signals in both the time and frequency domains.	Tuesday Aug. 19, 2:30 PM-4:30 PM, E&D Booth 4
Workshop: Aerospace EMC	Discusses Aerospace EMC, including design, development, and test for airplanes, helicopters, missiles, and spacecraft.	Friday Aug. 22, 8:30 AM-5:00 PM, 306B

Women in Engineering (WIE) Event

- Wednesday, August 20, 4:00 – 5:30 PM in room 301A

Stephanie Zajac

Guest Presentation

Spark the Chain Reaction – Mentorship and Outreach in STEM

Stephanie Zajac, Johns Hopkins Applied Physics Laboratory

What does it mean to be a mentor? How do you find a mentor? How do we become better mentors? Join your peers in Raleigh at the 2025 IEEE International Symposium on EMC+SIPI for an interactive Women in Engineering presentation that will discuss the impact of mentoring and K-12 outreach on recruiting and retention of under-represented groups. Together, we will explore why mentoring matters, how to get the most out of our mentoring relationships, and how we can all be better mentors to one another.

Young Professionals (YP) Ambassador Program

- **Invite a YP Ambassador to speak at your next chapter meeting virtually or in-person!**
- Goal: Inspire and inform EMC-S membership on technical and professional development topics
- Nika Amralah is a 2025 YP Ambassador offering a talk: *Launching Your EMC Career: A Blueprint for Young Engineers*

NATO Liaison Brief – 3 June 2025

- TC-8 Vice Chair Nika Amralah provided a **liaison report and presentation** to the following NATO groups:
    1. Electromagnetic Environmental Effects Action Team (E3AT)
    2. Air Electrical and Electromagnetic Working Group (AEWG)

- The intent was to establish communication on **areas of common interest**
- There is potential for TC-8 to act as subject matter expert reviewers

EMC Certification Exam Question Development

- The EMC Society Board of Governors intends to establish an EMC certification process for EMC Engineers and Technicians
- TC-1 has recognized the exemplary contributions of TC-8's substantial question submissions

Over 30 questions have been developed and reviewed

by our Officers-at-Large!

Standards Activity

- TC-8 is represented in several standards working groups
  - Thanks to our members for actively being involved and sharing their extensive knowledge of aerospace EMC!
- DO-160H update – Patrick Andre
- AIAA S-121 update – Jim Lukash
- Any other updates from our membership?

HV Subcommittee News

Lack of presence of the space community to exchange good practices/solutions → if you are interested join us!!

- Several meetings: 12/09/2024 - 12/2024 (mailing news) – 25/06/2025
- Strategy defined by the team:
  - Identify the challenges divided in different categories (System/sub-system, EMC component, material modeling, test equipment, standard,…)
  - Discuss the solutions/mitigation provided and the developments in the standards
  - Propose WS/Special Sessions on uncovered subjects.
- Update on the special session "EMC in Electrification of Aircraft" at EMC Europe 2025, which was accepted and supported by the subcommittee. → Charles will be present, and Cong may attend (TBC)
- Presentation at the EUROCAE WG31 EMI for Very High Power Electronics workshop on March 13-14 : Creation of a Task Force on the crosstalk topic for ED14 modification. SAE is launching a similar approach for DO 160, and they will work together. → Our subcommittee proposes to support this work by launching workshops or SSs at the 2026/2027 conferences dedicated to crosstalk to provide a solid foundation for developing the best method for this topic (IEEE SA also supports this approach).
- REACHES Initiative from TC7 → We have decided to support this initiative and will work closely together.
- For next time: Identify topics of interest and proposal Special Session/Workshop for 2026 dedicated to crosstalk with HV systems (IEEE EMC+SIPI 2026, APEMC 2026, EMC Europe 2026)

Roadmap for EMC in Aerospace High-voltage Electrical Systems (REACHES) Initiative:

In 10 years, make aerospace HV electrical system EMC solutions 10X cheaper, and 10X lighter

Voltage & Power levels: ≥800VDC, ≥100s kW

Committee: Cong Li, Hang Dai, Mike Garrett, Matthew Granger, Alex Leary, Shuo Wang, Niek Moonen, Mark Scott, Fang Luo, Charles Jullien, Finbarr O'Connor, Justin McKennon, Daren Nerad

June 25 2025

REACHES Initiative has been approved and endorsed by IEEE EMCS TC7 Electrical Systems and Power Electronics EMC on Mar 21 2025; Has been approved by TC8 Aeronautics and Space EMC – HV Subcommittee on June 25 2025

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Elections

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Elections: Voting Officers

- 2026 is the next election year (two-year term)
- All three officer roles will be up for reelection
  - Chair
  - Vice Chair
  - Secretary
- Please consider running or nominating a colleague

Special Election: Voting Officers

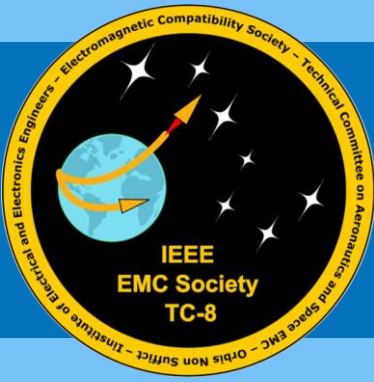
- The current TC8 leadership is proposing a swap between the Chair and Vice Chair roles
- Stephanie Zajac will remain as Secretary

- Current -		- Proposed -
Chair: Randy Jost Vice Chair: Nika Amralah	→	Chair: Nika Amralah Vice Chair: Randy Jost

Special Election: Result

- The following candidates were nominated and seconded for the stated positions:
  - Nika Amralah, TC8 Chair
  - Randy Jost, TC8 Vice Chair
  - Stephanie Zajac, TC8 Secretary
- Votes:
  - 28 AYE (25 in person, 3 online)
  - 0 NAY (in person, online)
  - Abstentions were not counted. There were 45 attendees other than the 3 candidates (37 in person, 8 online)
- Election was confirmed and new positions will take effect in January 2026

Future Work



Long Range Planning

- Officer Elections in 2026
- Paper submissions

How can we increase submissions?

IEEE EMC Society TC8 5-Year Plan					
Activity	2025 (THIS YEAR)	2026 (NEXT YEAR)	2027	2028	2029
	Raleigh, NC	Dallas, TX	Portland	Milwaukee	Providence
TC8 Meeting @ Symposium	x	x	x	x	x
Technical Topic Session	x	x	x	x	x
Special Session					
Sponsored Workshop		x			
Demonstrations					
Other Activity					
SC Charter Review	x	x	x	x	x
Leadership Succession		x		x	
Leadership Training	x	x	x	x	x

New Business

- Idea for 2026 Symposium: Special Session or Tutorial focusing on knowledge transfer
  - For example: addressing the “it depends…” situations that come up in Aerospace EMC work and why its not “one solution fits all”
  - Relevant standards can also be discussed

Open Discussion

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How to find us

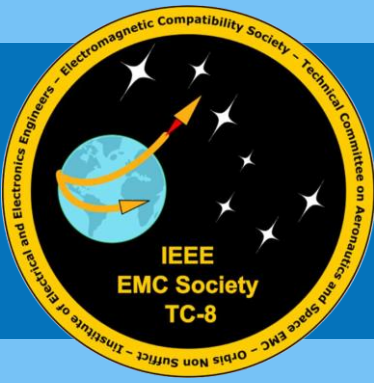
- TC-8 email
  - ieee.emc.tc8@gmail.com
- TC-8 website
  - TC 8 – Aeronautics and Space EMC – EMC Society
- LinkedIn group
  - https://www.linkedin.com/groups/8685221

All members and interested parties are welcome!

Adjourn

- Next in-person meeting will be in August 2026
- Thanks for joining us and we hope to see you again in Dallas!

Further Reading



HV Subcommittee

RALEIGH, NC

EMC+SIPI 2025

IEEE EMC Society TC-8

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2025 News – Outside the Symposium

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HV subcommittee

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Participants

90+

- 24 GE Aerospace
- 66+ External Participants
- 62+ In Person
- 28 Virtual

Organizations

42

- 5 Government Agencies & Research Labs
- 8 Universities
- 29 Companies

Talks

44

- 4 Keynotes
- 4 Tutorials
- 12 Panelists
- 24 Technical/Poster talks

Workshop recognized global challenges in standards, education, simulation, testing, and light weight solutions

In 10 years, REACHES will make EMC solutions 10X cheaper, and 10X lighter

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Aerospace Electrification Needs Cross-organization EMC Development

1. **Define the committee:**
    1. Cong Li-GE, Hang Dai-GE, Mike Garrett-NASA, Matthew Granger-NASA, Alex Leary-NASA, Shuo Wang-UF, Niek Moonen, Mark Scott, Fang Luo, Charles Jullienmore members to join.
2. **Define the problems**
    1. There are big technical gaps on EMC standards, education, simulation, testing, light weight solutions
3. **Define the solutions**
4. **Define the EMC development roadmap**
5. **Publicize through journal/conference papers & panel discussions**
6. **Shape development programs with government agencies**

Plan to finish 1st draft roadmap by the end of 2025 and start publicizing in early 2026

Open for more participations & inputs

Propose EMCS TC7 & TC8 to Endorse this REACHES Initiative

- Why TC7- Electrical Systems and Power Electronics EMC?
  - Power electronics and electrical systems are major EMI problem contributors to aerospace HV electrical systems
  - EMC technologies from REACHES initiative significantly benefit multiple applications, including aerospace, transportation, utility, etc. that are relevant to TC7 scope
- Why TC8 - Aeronautics and Space EMC?
  - Aeronautics and space systems have significant growth on HV electrical systems and are facing new EMC challenges
  - TC8 has a HV subcommittee, which Charles Jullien is the chair, and Cong Li is an active member
  - TC7 and TC8 jointly supported 2024 IEEE PEASA EMC workshop and attracted good global attendance

TC7 approved on Mar 21 2025

Working to get TC8 endorsement (TC8 HV Subcommittee Approved on June 25 2025)

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