

# Guest Editorial

## Special Section on IEEE CPEM 2024

**T**HE biennial Conference on Precision Electromagnetic Measurements (CPEM) was held on July 8–12, 2024, under the auspices of the Boulder Laboratory of the U.S. National Institute of Standards and Technology (NIST) and in collaboration with NCSL International (NCSLI). The conference was held at the Gaylord Rockies Resort and Convention Center, Aurora, CO, USA, jointly with NCSLI's Annual Workshop and Symposium.

CPEM was established in 1958 by NIST's predecessor organization, the National Bureau of Standards, Boulder, CO, USA [1], [2]. It is recognized as the most important conference dedicated to the science and engineering of electromagnetic metrology. The theme of CPEM 2024 was "A Focus on Critical and Emerging Technologies."

The CPEM 2024 Conference Chairs were Alexandra (Aly) Artusio-Glimpse and Marla Dowell. The Technical Program Committee, chaired by Samuel Benz and Erich Grossman—along with Technical Program Leads Aly Artusio-Glimpse, Alain Rüfenacht, Branislav Djokic, Dean Jarrett, Stephan Schlamming, Andrew Novick, and Yicheng Wang—had 119 members who reviewed all the short papers submitted to the conference. Of these, 201 short papers were accepted after two reviews each, grouped into sessions on voltage, current, resistance, impedance, microwave and magnetic sensors, sensors based on Rydberg atoms, Kibble and electrostatic balances, magnetic measurements, radio frequency and microwave measurements, time and frequency, thermal converters, power and energy, and a special session on metrology for promoting scalability of superconducting quantum computers [3].

A total of 64 extended papers, based on the short papers, were submitted for publication in this Special Section of IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT. Guest editors Ron Goldfarb, Dimitrios Georgakopoulos, Djamel Allal, and Yin Hsien Fung verified that

authors fulfilled the journal submission requirements. TRANSACTIONS administrator Laura Roach facilitated the article-submission and peer-review process, and the regular editors of the journal managed the reviews. They accepted 37 articles for this Special Section.

Organization and logistics for the joint NCSLI-CPEM conference were managed by Carol Hockert and Rob Knake. Jorge Martins, Dilip Shah, and Heather Wade were the NCSLI Technical Program Chairs. A tour of the NIST Boulder Laboratory was coordinated by Andrew Novick, Terri Viezbicke, and Rebecca Jacobson.

CPEM permanent sponsors are Bureau International des Poids et Mesures, NCSL International, IEEE Instrumentation and Measurement Society, National Research Council Canada, and NIST. Sponsors of CPEM 2024 were Transcat Inc., Fluke Corporation, and Measurements International.

The conference organizers thank the CPEM 2024 participants, authors, reviewers, session chairs, and technical program committee members who made this conference possible.

RON B. GOLDFARB, *Chief Guest Editor*  
National Institute of Standards and Technology  
Boulder, CO 80305 USA  
e-mail: ron.goldfarb@nist.gov

### REFERENCES

- [1] H. M. Altschuler, "The Conference On Precision Electromagnetic Measurements," *Proc. IEEE*, vol. 55, no. 6, p. 782, Jun. 1967, doi: [10.1109/PROC.1967.5690](https://doi.org/10.1109/PROC.1967.5690).
- [2] E. Ambler, "Keynote address: Conference on Precision Electromagnetic Measurements," *IEEE Trans. Instrum. Meas.*, vol. IM-32, no. 1, pp. 1–2, Mar. 1983, doi: [10.1109/TIM.1983.4314997](https://doi.org/10.1109/TIM.1983.4314997).
- [3] *Proc. Conf. Precis. Electromagn. Meas. (CPEM)*, 2024. [Online]. Available: <https://ieeexplore.ieee.org/xpl/conhome/10645824/proceeding>