IEEE AWPL Special Cluster 2025 on

"Artificial Intelligence in Design, Optimization and Measurement

of Antennas and Periodic Structures"

As the drastic development of the next generation communication and sensing technologies, the integration of Artificial Intelligence (AI) into the design of antennas and periodic structures has emerged as a transformative force, revolutionizing the way we design, analyze, optimize, and measure antennas and periodic structures. This special cluster seeks to explore the profound impact of AI on current antenna technologies, aiming to highlight the latest research, innovations, and practical applications in this rapidly evolving field.

The special cluster invites contributions that address these key areas, providing a comprehensive overview of how AI is re-shaping the future of antenna technologies. By presenting cutting-edge research and practical solutions, this cluster aims to foster collaboration and inspire further innovation in the intersection of AI and antenna engineering, ultimately contributing to the advancement of next-generation communication and sensing systems. The editors especially welcome both theoretical and experimental works that cover but not limited to the following topics:

- AI-assisted antenna design and optimization
- AI-assisted metasurface design
- AI-enabled antenna array synthesis and optimization
- Optimization of antenna measurement system based on deep learning
- Inverse design of periodic structures based on neural networks
- Generative AI on the designs of antennas and periodic structures
- AI-enabled RF channel characterization and antenna-channel optimization
- AI-driven electromagnetic wave propagation modelling
- AI-driven antenna performance prediction models

The Guest Editors of this Special Cluster are:

- Prof. Wei Lin, *The Hong Kong Polytechnic University, Hong Kong SAR China* w.lin@polyu.edu.hk
- Prof. Luyu Zhao, *Anhui University, China* lyzhao@ahu.edu.cn
- Prof. Guan-Long Huang, *Foshan University, China* hgl@fosu.edu.cn
- Prof. Chaoyun Song, *Kings College London, The United Kingdom* chaoyun.song@kcl.ac.uk
- Prof. Gangil Byun, *Ulsan National Institute of Science and Technology, Republic of Korea* byun@unist.ac.kr
- Prof. Takashi Tomura, *Institute of Science Tokyo, Japan* tomura@ee.e.titech.ac.jp

Prospective authors are encouraged to contact the Guest Editors for any questions or to determine the suitability of their contribution for this special cluster. Papers should be prepared following the same submission instructions as for regular IEEE AWPL manuscripts (four-pages technical content maximum and one reference page, double column, IEEE format), available via the Information for Authors website. The authors should indicate in the cover letter to the Editor-in-Chief that the manuscript is being submitted in response to the Call for Papers for this special cluster. Prospective authors should refer to the timeline below for key dates.

Key Dates:
- Submission deadline: **March 31, 2025**
- First decision: May 15, 2025
- Revised manuscripts deadline: June 15, 2025
- Final decision: July 30, 2025
- Final manuscripts due by: September 1, 2025
- Online publication: Shortly after final manuscript submission
- Cluster publication: November (or December) 2025 issue of AWPL