

# Artificial Intelligence Inspiring the Electromagnetic Wave

## ORGANIZERS:

Da Li, Zhejiang University

Ling Zhang, Zhejiang University

## ABSTRACT:

The workshop will present the latest development of AI technology in electromagnetic wave and electromagnetic coupling with neuron-science, such as new electromagnetic challenges in AI chips, Neuromorphic Chips, heterogeneous package integration.

## TALKS:

### Machine Learning Based Design and Optimization of HBM (High-bandwidth Memory Module) and High-speed Interconnections

*Prof. Joungho Kim, IEEE Fellow, KAIST*

### Machine Learning Methods and Data Driven Approaches for The Electromagnetic Modeling

*Prof. Lijun Jiang, IEEE Fellow, University of Hong Kong*

### Key Challenges of Power Integrity in the ICT Field

*Xiang Zhu, Huawei Technology Co Ltd*

### Electromagnetic Wave in the Neuromorphic Chip

*Dr. Da Li, Assistant Professor, Zhejiang University*

### Fast Modeling and Decap Optimization for Power Distribution Network Using Machine Learning Techniques

*Dr. Ling Zhang, Research Fellow, Zhejiang University*

## BIOS OF ORGANIZERS & SPEAKERS



**Da Li** received the B.S. degree in 2014, and the Ph.D. degree in 2019, from Zhejiang University, Hangzhou, China, both in electrical engineering. From 2017 to 2018, he worked at Nanyang Technological University, Singapore, as a Project Researcher. From 2019 to 2021, he joined Science and Technology on Antenna and Microwave Laboratory, Nanjing, China, as a Research Fellow. He is currently an assistant professor at Zhejiang University. His research interests include machine learning, antennas, metasurfaces, and electromagnetic compatibility. Dr. Li has authored or coauthored more than 20 refereed papers and served as Reviewers for 5 technical journals and TPC Members of 2 IEEE conferences.



**Ling Zhang** received a B.S. degree in electrical engineering from Huazhong University of Science and Technology, Wuhan, China, in 2015, and an M.S. degree and a Ph.D. from Missouri University of Science and Technology (Missouri S&T) in 2017 and 2021 respectively. He worked at Cisco as a student intern from August 2016 to August 2017. He is now working at Zhejiang University, Hangzhou, China as a postdoctoral research fellow.

Dr. Zhang's research interests include machine learning, electromagnetic interference (EMI), signal integrity (SI), power integrity (PI), and radio-frequency interference (RFI).



**Dr. Joungho Kim** received B.S. and M.S. degrees in electrical engineering from Seoul National University, Seoul, Korea, in 1984 and 1986, respectively, and Ph.D degree in electrical engineering from the University of Michigan, Ann Arbor, in 1993. In 1994, he joined Memory Division of Samsung Electronics, where he was engaged in Gbit-scale DRAM design. In 1996, he moved to KAIST (Korea Advanced Institute of Science and Technology). He is currently professor at electrical engineering department of KAIST and the joint faculty member of KAIST AI college. He is currently the director of Samsung-KAIST Industry Collaboration Center.



**Lijun Jiang** (M'04-SM'13-FM'19) received B.S. degree in Electrical Engineering from the Beijing University of Aeronautics and Astronautics in 1993, M.S. degree from the Tsinghua University in 1996, and Ph.D from the University of Illinois at Urbana-Champaign (UIUC) in 2004. From 1996 to 1999, he was an application engineer with the Hewlett-Packard Company. From 2004 to 2012, he worked at IBM T.J. Watson Research Center in. From Dec. 2009, he was an Associate Professor with the Department of Electrical and Electronic Engineering at the University of Hong Kong (Tenured in 2014). From Sept. 2014 to Mar. 2015, he was a Visiting Scholar at the University of California

at Los Angeles.

In 1998 he received the HP STAR Award. In 2003 he received the IEEE MTT Graduate Fellowship Award. In 2004 he received the Y.T. Lo Outstanding Research Award. In 2008 he received the IBM Research Technical Achievement Award. In 2016 he received the Outstanding Technical Contribution Award at 2016 APEMC. The research team he built at the University of Hong Kong has received over 15 international awards including the 1st Place Best Student Paper Award of 2014 ACES in FL, the 23th IEEE EPEP Best Paper Award in Oregon, Young Scientist Award of 2016 EMTS in Finland, the Best Poster Paper Award of 2016 IEEE EPEPS in San Diego, Best Student Symposium Paper Award First Place and President's Memorial Award Presented in Memory of Guy deBurgh and Bill Kimmel of 2016 IEEE Int. Symposium on EMC in Canada, etc. In 2018 he received the Technical Achievement Award by IEEE EMC Society in Singapore. In 2019, he was elevated to IEEE Fellow and ACES Fellow.

He served as the Associate Editor of IEEE Transactions on Antennas and Propagation, the Editor of Progress in Electromagnetics Research, the Associate Guest Editor of the Proceedings of IEEE Special Issue in 2011~2012, an IEEE AP-S Member, an IEEE MTT-S member, and an ACES member. He was the General Chair, TPC Chair, Session Organizer, and Session Chair of many international conferences. He reviews manuscripts for most first tier international microwave and electromagnetics journals.

His research interests focus on applied heterogeneous electromagnetics, antenna and microwave engineering, electromagnetic material engineering, etc.



**Xiang Zhu** received a bachelor's degree in electronic engineering from Central South University and a master's degree in testing technology and automation equipment from Wuhan University, CHINA, in 2000 and 2003. Since 2005, he has been engaged in system SI/PI analysis and co-design of chip-package-PCB in Huawei Beijing Research Center. His current research interests include dynamic power supply technology, board-level minimalist filter design, board-level noise reduction design, and artificial intelligence-based filter design.