Zhen Peng, Ph.D.

UNM | Electrical & Computer Engineering

Contact Information

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Professional Experience

Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, USA

Assistant Professor — **August, 2013 - present**

ElectroScience Laboratory, The Ohio State University, Columbus, Ohio, USA

Senior Research Associate — **July, 2010 - July, 2013**
Postdoctoral Researcher — **May, 2009 - July, 2010**
Visiting Scholar — **October, 2008 - April, 2009**

Professional Preparation

The Ohio State University	Electromagnetics		2008-2009
Chinese Academy of Sciences	Engineering	Ph.D.	2008
University of Science and Technology of China	Electrical Engineering	B.S.	2003

Research Areas

Computational science on the wave physics and multi-physics analysis:

- Physics-oriented statistical wave analysis integrating order and chaos;
- Parallel-in-time computation for time-domain Maxwell Equations;
- Computational Electrodynamics with machine intelligence;
- Quantum chaos analysis and stochastic numerical solvers;
- Domain decomposition (DD) methods for finite element method (FEM) and surface integral equation (IE) method;
- Finite element and integral equation discontinuous Galerkin (DG) methods.

Simulation-driven engineering and scientific discoveries:

- Electromagnetic information theory for communication through complex wave-chaotic and disordered media;
- Supercomputing-enabled design-through-analysis paradigm toward real-time design;
- First-principles modeling and quantitative statistical analysis of millimeter-wave (mmWave) wireless channels in real-world environments
- Power integrity (PI) and signal integrity (SI) analyses of high-power integrated circuits (ICs), packages and printed circuit boards (PCBs); thermal-aware IR-drop analysis;
- Reconfigurable antennas for wireless communication systems, modeling and analysis of conformal array antennas and terahertz antennas;
- Electromagnetic compatibility/interference (EMC/EMI) analysis of multiple antenna systems on large platforms;
- Electromagnetic scattering, statistical RF signature prediction of targets with realistically complex shapes and materials;
- Electromagnetic applications of multi-scale metamaterial.

Honors and Awards

Advisor of students' honors and awards

2018,"A Space-Time Domain Decomposition Method for High-fidelity Electromagnetic Simulation", 1st place in the student paper competition, 2018 International Applied Computational Electromagnetics Society (ACES) Symposium, Denver, Colorado, USA, March 25-29, 2018. (Shu Wang and Zhen Peng)

2018 "First-Principles Statistical Model of Communication Through Wave-Chaotic Environments" received honorable mention award at 2018 IEEE AP-S Student Paper Competition (Shen Lin and Zhen Peng)

2017, 26th Electrical Performance of Electronic Packaging and System Best Paper Award, "A novel stochastic wave model statistically replicating reverberation chambers" (Shen Lin and Zhen Peng)

2017, UNM ECE Graduate Student Excellence Award (Brain MacKie-Mason)

2017 "Quantitative Statistical Analysis with Physics-based Surrogate Modeling for Wave Chaotic Systems" received honorable mention award at 2017 IEEE AP-S Student Paper Competition (Shen Lin and Zhen Peng)

2017 "Supercomputing-enabled first-principles analysis of wireless channels in real-world environments" entered into the best IMS Advanced Practice Paper in upcoming 2017 IEEE IMS symposium

2016, 20th IEEE Workshop on Signal Integrity and Power Integrity Best Poster Paper Award (Shen Lin, Hong-Wei Gao, and Zhen Peng)

2016, UNM ECE Student Paper Competition, 3rd prize in Journal Paper Section (Brian MacKie Mason, Andrew Greenwood, and Zhen Peng)

Professional awards and recognition

2018, National Science Foundation CAREER Award

2018, Best Transaction Paper Award - IEEE Transactions on Components, Packaging and Manufacturing Technology

2017, IEEE Albuquerque Section's Outstanding Young Engineer Award

2017, 21th IEEE Workshop on Signal and Power Integrity (SPI2017) Young Investigator Training Program Awardee

2016, University of New Mexico ECE Distinguished Researcher Award

2016, URSI Asia-Pacific Radio Science Conference Young Scientist Award

2016, 20th IEEE Workshop on Signal and Power Integrity (SPI2016) Young Investigator Training Program Awardee

2016, 20th IEEE Workshop on Signal Integrity and Power Integrity Best Poster Paper Award

2015, The Applied Computational Electromagnetics Society Early Career Award

2014, Best Transaction Paper Award - IEEE Antenna and Propagation Sergei A. Schelkunoff Transactions Prize Paper Award

2014, Young Scientist Award of XXXI General Assembly and Scientific Symposium of the International Union of Radio Science (URSIGASS 2014)

2013, Young Scientist Award of 2013 Asia-Pacific Radio Science Conference (AP-RASC 13), Taipei, Taiwan

2013, Young Scientist Award of the 2013 International Symposium on Electromagnetic Theory (EMT-S 2013), Japan

2012, Candidate for P. W. King award, IEEE Transactions on Antennas and Propagation

2011, Best Paper Award in Student Paper Competition (co-advising), The 27th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2011), Willamsburg VA, 2011

2011, ElectroScience Laboratory Annual Best Paper Award, Columbus, Ohio, USA

2010, Young Scientist Award in International Symposium on Electromagnetic Theory (EMT-S 2010), Berlin, Germany

2010, The First Prize of Beijing Science and Technology Progress, Beijing, China

Invited Talks

2017 University of Nottingham, School of Mathematical Sciences/George Green Institute for Electromagnetics Research, Nottingham, UK, *Extreme-Scale Electromagnetic Analysis Integrating Order and Chaos*

2017 XXXII General Assembly and Scientific Symposium of the International Union of Radio Science (URSIGASS 2017), Montreal, Canada, *Fusion of First-Principles and Statistical Analyses in Complex Electronics Systems*

2017 Politecnico Di Torino, Department of Electronics and Telecommunications, Turin, ITALY, *Intra-Systems EMI for Complex Electronics*

2017 Stanford University, Department of Mathematics, Institute for Computational and Mathematical Engineering, *Extreme-Fidelity Electrodynamics Modeling & Simulation in the Supercomputing Era*

2017 NEMO (IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization for RF, Microwave, and Terahertz applications, *EM-CAD for Complex Electronics Systems: A Journey from Order to Chaos*

2017 SIAM (Society for Industrial and Applied Mathematics) Conference on Computational Science and Engineering, Georgia, USA, *Domain Decomposition in the Wave Chaos Analysis*

2017 National Radio Science Meeting (NRSM), Boulder, CO, USA, *Chaotic High-Fidelity and Quantitative Statistical Analysis for Wave System*

2016 SIAM (Society for Industrial and Applied Mathematics) Annual Meeting, Boston, MA, *Advances in fast algorithms for high accuracy solutions to PDEs*

2016 Politecnico Di Torino, Department of Electronics and Telecommunications, Turin, ITALY, *High-Fidelity Electrodynamic Modeling & Simulation in the Era of Extreme-Scale SuperComputing*

2016 Gdansk University of Technology, Gdansk, Poland, *Computational Electromagnetics: Domain Decomposition Methods and Practical Applications*

2016 U. S. Wright-Patterson AFB, Dayton, Ohio, *Supercomputing Enabled Design-Through-Analysis Paradigm Towards Extreme-Scale*

2016 U. S. Army Engineer Research and Development Center, Vicksburg, Mississippi, *High-fidelity Electrodynamics Modeling & Simulation in the SuperComputing Era*

2016 Guest speaker for 7th Asia-Pacific International Symposium on Electromagnetic Compatibility & Signal Integrity and Technical Exhibition, Shenzhen, China, *High-Fidelity Modeling and Multi-Scale Simulation Methods for EMI/EMC Analysis of IC and Electronics*

2015 Mathematical Foundations for Fast Multi-resolution Interactions and Large Data Analysis Workshop, Duke University, Durham, NC, *A geometry-aware integral equation domain decomposition method for multi-scale electromagnetic problems*

2015 Frontiers in Applied and Computational Mathematics (FACM 2015), Newark, NJ, *Scalable Integral Equation Algorithms for Time-Harmonic Maxwell Equations*

2014 XXXI General Assembly and Scientific Symposium of the International Union of Radio Science (URSIGASS 2014), Beijing, China, *Recent Advances on Integral Equation Methods for Electromagnetic Modeling of Complex Objects*

2014 CBMS-NSF Conference Fast Direct Solvers for Elliptic PDEs, Dartmouth College, *Boundary Integral Equation Methods for High-fidelity Composite Electromagnetic Problems*

2014 Department of Mathematics and Statistics, University of New Mexico, UM, *Discontinuous Galerkin Methods for Time-Harmonic Maxwell Equations*

2014 Institute of Electronics of the Chinese Academy of Sciences (IECAS), Beijing, China, *Recent Advances in Computational Electromagnetics and Multi-physics Analysis*

2014 Department of Electrical and Computer Engineering, Beijing Institute of Technology, Beijing, China, *Advancing Computational Electromagnetics Towards Real-world Applications*

2014 The Albuquerque IEEE Joint Chapter Presents, New Mexico, U.S.A., *Advancing Computational Electromagnetics Towards Multi-Scale Real-world Applications*

2013 BIRS workshop Integral Equations Methods: Fast Algorithms and Applications, Banff, Canada, *Integral Equation Domain Decomposition with Discontinuous Galerkin Discretization for Electromagnetic Problems*

2013 Workshop on Fast Boundary Element Methods in Industrial Applications, Söllerhaus, Austria, *Integral Equation Domain Decomposition with Discontinuous Galerkin Discretization for Time-Harmonic Maxwell Equations*

2013 Frontiers in Applied and Computational Mathematics (FACM 2013), Newark, NJ, *Recent Advances in Surface Integral Equation Methods for Time-Harmonic Maxwell Equations*

2013 Department of Electrical and Computer Engineering, University of New Mexico, UM, *Emerging Technologies in Computational Electromagnetics for Multi-scale Real-world Applications*

2013 Mathematisches Forschungsinstitut Oberwolfach Workshop: Computational Electromagnetism and Acoustics, *A Discontinuous Galerkin Surface Integral Equation Method for Time-harmonic Maxwell Equations*

2012 Seminar of Applied Mathematics, ETH Zürich, *Domain Decomposition Methods for Solving Maxwell Equations*

2012 Soellerhaus Workshop on Fast Boundary Element Methods in Industrial Applications, *Surface Integral Equation Domain Decomposition Methods for Solving Time-harmonic Maxwell Equations*

2011 Asia-Pacific EMC Symposium (APEMC 2011) on *Multi-physics Analysis in High Power ICs*

Short Courses

- The 30th International Review of Progress in Applied Computational Electromagnetics (ACES 2014)
  - *Boundary Integral Equation Domain Decomposition Methods for Complex Electromagnetic Applications*
- The 28th International Review of Progress in Applied Computational Electromagnetics (ACES 2012)
  - *Non-overlapping and Non-conformal Domain Decomposition Method for Full Wave Solution of Time Harmonic Maxwell's Equations*
- 2012 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting (APS-URSI 2012)
- The 27th International Review of Progress in Applied Computational Electromagnetics (ACES 2011)
  - *CEM Algorithms for EMC/EMI Modeling: Electrically Large (Antennas on Platform) and Small (Signal Integrity in Integrated Circuits and Packaging) Problems*

Society Experiences

Society Memberships

Institute of Electrical and Electronic Engineers (IEEE)
IEEE Antennas and Propagation Society (AP-S) Member
United States National Committee (USNC) of the Union Radio-Scientifique Internationale (URSI)
The Union Radio-Scientifique Internationale (URSI), Commission E
Society for Industrial and Applied Mathematics (SIAM)

Technical Program Committee

The 2nd IEEE Antennas and Propagation Society Topical Meeting on Computational Electromagnetics (ICCEM 2016)
The 13th International Workshop on Finite Elements for Microwave Engineering (FEM Workshop 2016)
The 1st IEEE Antennas and Propagation Society Topical Meeting on Computational Electromagnetics (ICCEM 2015)

Student Paper Competition Committee

2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting
The 31th International Review of Progress in Applied Computational Electromagnetics (ACES 2015)

Student Paper Competition Chair

2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting

Short Course and Workshop Chair

The 28th International Review of Progress in Applied Computational Electromagnetics (ACES 2012)

Conference Session Chair

2018 URSI National Radio Science Meeting (NRSM)
2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting (2017 IEEE AP-S/USNC-URSI)
2017 IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization for RF, Microwave, and Terahertz Applications (NEMO 2017)
2017 International Applied Computational Electromagnetics Society (ACES) Symposium
2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting (2016 IEEE AP-S/USNC-URSI)
The 32nd International Review of Progress in Applied Computational Electromagnetics (ACES 2016)
The 37th Progress in Electromagnetics Research Symposium 2016 (PIERS 2016)
23rd International Conference on Domain Decomposition Methods (DD XXIII)
The 31st International Review of Progress in Applied Computational Electromagnetics (ACES 2015)
XXXI General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS 2014)
2014 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting (2014 IEEE AP-S/USNC-URSI)
The 12th International Workshop on Finite Elements for Microwave Engineering (FEM Workshop 2014)
The 30th International Review of Progress in Applied Computational Electromagnetics (ACES 2014)
2013 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting (2013 IEEE AP-S/USNC-URSI)
Progress in Electromagnetics Research Symposium 2013 (PIERS 2013)
International Conference on Electromagnetics in Advanced Applications (ICEAA2013)
2013 International Symposium on Electromagnetic Theory (EMTS 2013)
21th International Conference on Domain Decomposition methods, 2012
The 28th International Review of Progress in Applied Computational Electromagnetics (ACES 2012)
The 11th International Workshop on Finite Elements for Microwave Engineering (FEM Workshop 2012)
IEEE Electrical Design of Advanced Package & Systems Symposium (EDAPS 2010), Singapore, Dec. 7-9, 2010
Progress in Electromagnetics Research Symposium (PIERS 2010) , XiAn, China, March 22-26, 2010

Reviewer

Proceedings of the IEEE
SIAM Journal on Scientific Computing
IEEE Transactions on Antennas and Propagation
IEEE Transactions on Magnetics
IEEE Transactions on Microwave Theory and Techniques
IEEE Transactions on Components, Packaging and Manufacturing Technology
IEEE Transactions on Geoscience and Remote Sensing
ACES Journal
International Journal of Antennas and Propagation
International Journal of Numerical Modeling: Electronic Networks, Devices and Fields
Progress in Electromagnetics Research

Book Forthcoming

DOMAIN DECOMPOSITION METHODS FOR SOLVING TIME HARMONIC MAXWELL EQUATIONS

Journal Papers

Google scholar citations: 1193 (996 Since 2013)
The most popular papers have been cited: [27] 129; [31] 78; [30] 75

[1] Hong-Wei Gao, Zhen Peng, and Xin-Qing Sheng, "A Coarse-Grained Integral Equation Method for Multi-Scale Electromagnetic Analysis," *IEEE Transactions on Antennas and Propagation*, vol. 66, no. 3, pp. 1607-1612, March 2018.

[2] Zhen Peng, Yang Shao, Hong-Wei Gao, Shu Wang and Shen Lin, "High-Fidelity, high-performance computational algorithms for intra-system electromagnetic interference analysis of IC and electronics," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, Invited paper for Special Topics Section on Addressing Signal and Power Integrity in Future Generation Systems. vol. 7, no. 5, pp. 653-668, May 2017. (**Best Paper Award among papers published in the Transactions during the previous year**)

[3] Hong-Wei Gao, Zhen Peng, and Xin-Qing Sheng, "A Geometry-Aware Domain Decomposition Preconditioning for Hybrid Finite Element-Boundary Integral Method," *IEEE Transactions on Antennas and Propagation*, vol. 65, no. 4, pp. 1875-1885, April 2017.

[4] Zhen Peng, Ralf Hiptmair, Yang Shao and Brian MacKie-Mason, "Domain decomposition preconditioning for surface integral equations in solving challenging electromagnetic scattering problems," *IEEE Transactions on Antennas and Propagation*, vol. 64, no. 1, pp. 210-223, Jan. 2016.

[5] Brian MacKie-Mason, Andrew Greenwood and Zhen Peng, "An adaptive, parallel surface integral equation solver for very large-scale electromagnetic modeling and simulation," *Progress In Electromagnetics Research*, vol. 154, pp. 143-162, 2015. (**Invited paper for the Commemorative Collection on the 150-Year Anniversary of Maxwell's Equations**)

[6] Zhen Peng, "A novel multi-trace boundary integral equation formulation for electromagnetic cavity scattering problems," *IEEE Transactions on Antennas and Propagation*, vol. 63, no. 10, pp. 4446-4457, Oct. 2015.

[7] Victorita Dolean, Martin Gander, Stephane Lanteri, Jin-Fa Lee and Zhen Peng, "Effective transmission conditions for domain decomposition methods applied to the Time-Harmonic Curl-Curl Maxwell's Equations," *Journal of Computational Physics*, vol. 280, pp. 232-247, 2015.

[8] Zhen Peng, Kheng-Hwee Lim and Jin-Fa Lee, "A boundary integral equation domain decomposition method for electromagnetic scattering from large and deep cavities," *Journal of Computational Physics*, vol. 280, pp. 626-642, 2015.

[9] Ralf Hiptmair, Carlos Jerez-Hanckes, Jin-Fa Lee, and Zhen Peng, "Domain decomposition for boundary integral equations via local multi-trace formulations," in Domain Decomposition Methods in Science and Engineering XXI (J. Erhel, M. J. Gander, L. Halpern, G. Pichot, T. Sassi, and O. Widlund, eds.), vol. 98 of the seriesLecture Notes in Computational Science and Engineering, pp. 43-57, Springer International Publishing, 2014.

[10] Jian-Gong Wei, Zhen Peng and Jin-Fa lee, "Multi-scale electromagnetic computations using a hierarchical multi-level fast multipole algorithm," *Radio Science*, doi:10.1002/2013RS005250, 2014.

[11] Victorita Dolean, Martin Gander, Stephane Lanteri, Jin-Fa Lee and Zhen Peng, "Optimized Schwarz Methods for Curl-Curl Time-Harmonic Maxwell's Equations," in Domain Decomposition Methods in Science and Engineering XXI (J. Erhel, M. J. Gander, L. Halpern, G. Pichot, T. Sassi, and O. Widlund, eds.), vol. 98 of the series Lecture Notes in Computational Science and Engineering, pp. 587-595, Springer International Publishing, 2014.

[12] R. Hiptmair, C. Jerez-Hanckes, J. Lee and Z. Peng, "Domain Decomposition for boundary integral equations via local multi-trace formulation," *SAM Report*, vol. 2013-08, 2013.

[13] Zhen Peng, Kheng-Hwee Lim and Jin-Fa Lee, "A discontinuous Galerkin surface integral equation method for electromagnetic wave scattering from nonpenetrable targets," *IEEE Transactions on Antennas and Propagation*, vol. 61, no. 7, pp. 3617-3628, 2013. (**Best Paper Award among papers published in the Transactions during the previous year**)

[14] Zhen Peng, Kheng-Hwee Lim and Jin-Fa Lee, "Non-conformal domain decomposition methods for solving large multi-scale electromagnetic scattering problems," *Proceedings of IEEE*, vol. 101, no. 2, pp. 298-319, 2013.

[15] Yang Shao, Zhen Peng and Jin-Fa lee, "Thermal analysis of high-power integrated circuits and packages using non-conformal domain decomposition method," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 3, no. 8, pp. 1321-1331, 2013.

[16] Zhen Peng, Kheng-Hwee Lim and Jin-Fa Lee, "Computations of electromagnetic wave scattering from penetrable composite targets using a surface integral equation method with multiple traces," *IEEE Transactions on Antennas and Propagation*, vol. 61, no. 1, pp. 256-269, 2013.

[17] Zhen Peng and Jin-Fa Lee, "A scalable non-overlapping and non-conformal domain decomposition method for solving time-harmonic Maxwell Equations in R3," *SIAM Journal on Scientific Computing.*, vol. 34, no. 3, pp. A1266-A1295, 2012.

[18] Jian-Gong Wei, Zhen Peng and Jin-Fa lee, "A fast direct matrix solver for surface integral equation methods for electromagnetic wave scattering from non-penetrable targets," *Radio Science*, vol. 47, RS5003, doi:10.1029/2012RS004988.

[19] Yang Shao, Zhen Peng, Kheng-Hwee Lim and Jin-Fa Lee, "Non-conformal domain decomposition methods for time-harmonic Maxwell Equations," *Proceedings of the Royal Society A*, vol. 468, no. 2145, pp. 2433-2460, 2012.

[20] Xiao-Min Pan, Wei-Chao Pi, Ming-lin Yang, Zhen Peng and Xin-Qing Sheng, "Solving problems with over one billion unknowns by the MLFMA," *IEEE Transactions on Antennas and Propagation*, vol. 60, no. 5, pp. 2571-2574, 2012.

[21] Yang Shao, Zhen Peng and Jin-Fa Lee, "Thermal-aware DC IR-Drop co-analysis using non-conformal domain decomposition methods," *Proceedings of the Royal Society A*, vol. 468 no. 2142, pp. 1652-1675, June, 2012.

[22] Xiao-Min Pan, Jian-Gong Wei, Zhen Peng and Xin-qing Sheng, "A fast algorithm for multi-scale electromagnetic problems using interpolative decomposition and multilevel fast multipole algorithm," *Radio Science*, vol. 47, issue 1, 2012.

[23] Xiaochuan Wang, Zhen Peng and Jin-Fa Lee, "Multi-solver domain decomposition method for modeling EMC effects of multiple antennas on a large air platform," *IEEE Transactions on Electromagnetic Compatibility*, vol. 54, no. 2, pp. 375-388, 2012.

[24] Jue Wang, Zhen Peng and Jin-Fa Lee, "A universal array approach for finite elements with continuously inhomogeneous material properties and curved boundaries," *IEEE Transactions on Antennas and Propagation*, vol. 60, no. 10, 10.1109/TAP.2012.2207310, 2012.

[25] Yang Shao, Zhen Peng and Jin-Fa Lee, "Signal integrity analysis of high-speed interconnects by using non-confomal domain decomposition method," *IEEE Transactions on Components, Packaging, and Manufacturing Technology*, vol. 2, no. 1, pp. 122-130, Jan. 2012.

[26] Zhen Peng and Jin-Fa Lee, "Non-conformal domain decomposition method with mixed true second order transmission condition for solving large finite antenna arrays," *IEEE Transactions on Antennas and Propagation*, vol. 59, no.5, pp. 1638-1651, 2011.

[27] Zhen Peng, Xiaochuan Wang and Jin-Fa Lee, "Integral equation based domain decomposition method for solving electromagnetic wave scattering from non-penetrable objects," *IEEE Transactions on Antennas and Propagation*, vol. 59, no. 9, pp. 230-241, 2011. (**Citations to date: 129**)

[28] Yang Shao, Zhen Peng and Jin-Fa Lee, "Full wave 3-D full package signal integrity analysis using non-conformal domain decomposition method," *IEEE Transactions on Microwave Theory and Techniques*, vol. 59, no. 2, pp. 230-241, 2011.

[29] Zhen Peng, Mattew B. Stephanson, and Jin-Fa Lee, "Fast computation of angular responses of large-scale three-dimensional electromagnetic wave scattering," *IEEE Transactions on Antennas and Propagation*, vol. 58, no.9, pp. 3004-3012, Sep. 2010.

[30] Zhen Peng and Jin-Fa Lee, "Non-conformal domain decomposition method with second order transmission conditions for time-harmonic electromagnetics," *Journal of Computational Physics*, vol. 229, pp. 5615-5629, 2010.

[31] Zhen Peng, Vineet Rawat, and Jin-Fa Lee, "One way domain decomposition method with second order transmission conditions for solving electromagnetic way problems," *Journal of Computational Physics*, vol. 229, pp. 1181-1197, 2010.

[32] Xin-Qing Sheng, Zhen Peng, "Analysis of scattering by large objects with off-diagonally anisotropic material using finite element-boundary integral-multilevel fast multipole algorithm," *IET Microwave Antennas and Propagation*, vol. 4, Iss. 4, pp. 492-500, 2010.

[33] Zhen Peng, Xin-Qing Sheng and F. Yin, "An efficient twofold iterative algorithm of FE-BI-MLFMA using multilevel inverse-based ILU preconditioning," *Progress In Electromagnetics Research*, PIER 93, 369-384, 2009.

[34] Zhen Peng and Xin-Qing Sheng, "A flexible and efficient Higher-Order FE-BI-MLFMA for Scattering by a Large Body with Deep Cavities," *IEEE Transactions on Antennas and Propagation*, pp. 2031-2042, vol. 56, no. 7, 2008.

[35] Zhen Peng and Xin-Qing Sheng, "A bandwidth estimation approach for the asymptotic waveform evaluation technique," *IEEE Transactions on Antennas and Propagation*, pp. 913-917, vol. 56, no. 3, 2008.

[36] Zhen Peng and Xin-Qing Sheng, "Application of rational function approximation technique to hybrid FE-BI-MLFMA," *Acta Electronica Sinica.*, pp. 446-452, vol. 36, no. 3, Mar, 2008.

[37] Zhen Peng and Xin-Qing Sheng, "Application of multilevel ILU preconditioning technique to hybrid FE/BI/MLFMA method," *Acta Electronica Sinica.*, pp. 230-234, vol. 36, no. 2, Feb., 2008.

[38] Zhen Peng and Xin-Qing Sheng, "Application of rational function approximation technique to hybrid FE-BI-MLFMA," *International Journal of RF and Microwave Computer-Aided Engineering*, pp. 521-532, vol. 17, no. 6. Nov. 2007.

[39] Zhen Peng and Xin-Qing Sheng, "Application of asymptotic waveform approximation technique to hybrid FE-BI Method for 3D Scattering," *Science in China, Series F: Information Sciences*, pp. 124-134, vol. 50, no. 1, Feb. 2007.

[40] Xin-Qing Sheng and Zhen Peng, "Further cognition of hybrid FE/BI/MLFMA — investigation of the hybrid computing technique for scattering by large complex targets," *Acta Electronica Sinica.*, pp. 93-98, vol. 34, no. 1, Jan. 2006.

[41] Zhen Peng and Xin-Qing Sheng, "Application of rational function approximation technique to hybrid FE/BI/MLFMA for 3D Scattering," *PIERS Online*, pp. 521-532, vol. 3, no. 6. 2007.

[42] Zhen Peng and Xin-Qing Sheng, "Fast algorithm of edge-element for the high-order modes in dielectric-loaded waveguides with arbitrarily transverse cross-sections," *Acta Electronica Sinica.*, pp. 2149-2152, vol. 33, no. 12, Dec. 2005.

Conference Papers

[1] Shen Lin and Zhen Peng, "A Novel Stochastic Wave Model Statistically Replicating Reverberation Chambers," *26th Conference on Electrical Performance of Electronic Packaging and Systems*, (**Best Student Paper Award**), San Jose, California, USA, October 2017.

[2] Shu Wang and Zhen Peng, "Space-Time Parallel Computation for Time-Domain Maxwell's Equations," *2017 International Conference on Electromagnetics in Advanced Applications (ICEAA)*, (**ICEAA IEEE-APWC Awards Finalist**), Verona, Italy, September 2017.

[3] Shen Lin and Zhen Peng, "Fusion of First-Principles and Statistical Analysis in Complex Electronics Systems, " *XXXII General Assembly and Scientific Symposium of the International Union of Radio Science (URSIGASS 2017)*, (**Invited Talk**), Montreal, Canada, August 2017.

[4] Zhen Peng, Yang Shao and Shen Lin, "First-Principles Modeling and Statistical Characterization of Wireless Channels in Complex Electromagnetic Environments, " *XXXII General Assembly and Scientific Symposium of the International Union of Radio Science (URSIGASS 2017)*, (**Invited Talk**), Montreal, Canada, August 2017.

[5] Shu Wang and Zhen Peng, "A Space-Time Parallel Domain Decomposition Method for High Fidelity Electromagnetic Analysis," *2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, San Diego, California, USA, July 2017.

[6] Shen Lin, Zhen Peng, and Thomas Antonsen, "Quantitative Statistical Analysis with Physics-based Surrogate Modeling for Wave Chaotic Systems," *2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, (**Honorable Mention Award in Student Paper Competition**), San Diego, California, USA, July 2017.

[7] Brian Mackie-Mason and Zhen Peng, "Towards Real-time In-Situ Antenna Analysis and Design on Platforms of 1000 Wavelengths," *2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, San Diego, California, USA, July 2017.

[8] Yang Shao and Zhen Peng, "Supercomputing-Enabled First-Principles Analysis of Wireless Channels in Urban Environments," *2017 International Microwave Symposium (IMS)*, (**entered into the best IMS Advanced Practice Paper**) Honolulu, HawaiI, June 2017.

[9] Zhen Peng and Shen Lin, "EM-CAD for Complex Electronics Systems: A Journey from Order to Chaos," *2017 IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization for RF, Microwave, and Terahertz Applications*, (**Invited Talk**), Sevilla, Spain, May 2017.

[10] Zhen Peng, "Geometry-Aware Domain Decomposition Methods in High-Fidelity Electromagnetic Design," *2017 IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization for RF, Microwave, and Terahertz Applications*, Sevilla, Spain, May 2017.

[11] Shen Lin, Zhen Peng, and Thomas Antonsen, "Fusion of First-Principles and Statistical Analyses in Complex Electronics Systems," *21th IEEE Workshop on Signal Integrity and Power Integrity (SPI2017)*, (**Young Investigator Training Program Awardee**), Baveno, Italy, May 2017.

[12] Zhen Peng, "Domain Decomposition in the Wave Chaos Analysis," *2017 SIAM Conference on Computational Science and Engineering*, (**Invited Talk**), Atlanta, Georgia, USA, February 2017.

[13] Shen Lin, Zhen Peng, and Thomas Antonsen, "A hybrid method for quantitative statistical analysis of in-situ IC and electronics in complex and wave-chaotic enclosures," *2016 Progress In Electromagnetic Research Symposium (PIERS)*, Shanghai, China, August 2016.

[14] Brian Mackie-Mason and Zhen Peng, "High-fidelity, high-performance integral equation solver for time-harmonic Maxwell's Equations," *2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, Puerto Rico, USA, June 2016.

[15] Shu Wang, Hong-Wei Gao, Yang Shao, and Zhen Peng, "Scalable full-wave algorithms for signal integrity analysis of 3D ICs and Packages," *2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, Puerto Rico, USA, June 2016.

[16] Shen Lin, Zhen Peng, and Thomas Antonsen, "Multi-scale modeling and stochastic analysis of IC and electronics in complex and wave-chaotic enclosures," *2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, Puerto Rico, USA, June 2016.

[17] Yang Shao, Shu Wang, and Zhen Peng, "Exploring high-fidelity modeling and multi-scale simulation methods for EMI/EMC analysis of IC and electronics," *2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, Puerto Rico, USA, June 2016.

[18] Hong-Wei Gao, Zhen Peng, and Xing-Qing Sheng, "A multi-scale surface integral equation domain decomposition method for high-fidelity electromagnetic simulation," *2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, Puerto Rico, USA, June 2016.

[19] Zhen Peng, "High-performance surface integral equation solvers towards extreme-scale electromagnetic computation," *2016 SIAM Annual Meeting*, Boston, Massachusetts, USA, July 2016.

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