Curriculum Vitae

DongHyun (Bill) Kim

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Google Scholar: https://scholar.google.com/citations?user=rUODR8wAAAAJ

Research Interest:

- Signal Integrity (SI), Power Integrity (PI), and Temperature Integrity (TI)
- Electrostatic Discharge (ESD)
- High-speed SerDes Channel Modeling and Printed Circuit Board (PCB) Material Characterization
- Dielectric Material Characterization
- Particle Simulation on Semiconductor Devices

Education:

09/2014 – 08/2018	Ph.D. School of Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea (Advisor: Dr. Joungho Kim)
03/2013 – 08/2014	M.S. Department of Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea (Advisor: Dr. Seok-Hee Lee)
08/2007 – 08/2012	B.S. Department of Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

Employment:

11/2023 – Present	**College of Engineering and Computing Dean's Scholar**, Department of Electrical and Computer Engineering, Missouri University of Science and Technology, Rolla, MO (Formerly University of Missouri Rolla, UMR)
09/2019 – Present	**Assistant Professor**, Department of Electrical and Computer Engineering, Missouri University of Science and Technology, Rolla, MO
12/2018 – 08/2019	**Visiting Research Assistant Professor**, Department of Electrical and Computer Engineering, Missouri University of Science and Technology, Rolla, MO
08/2012 – 02/2013	**Researcher**, Nano Device Laboratory, Department of Electrical Engineering, KAIST, Daejeon, Republic of Korea

Professional Activities:

[13]	**Session Chair**	2024 International Symposium on EMC, Signal & Power Integrity (Aug. 2024)
[12]	**Chair**	IEEE EMC Society Technical Committee 10-Signal and Power Integrity (Aug. 2024-Current)
[11]	**Session Chair**	2023 International Symposium on EMC, Signal & Power Integrity (Jul. 2023)
[10]	**Panelist**	NSF (Mar. 1-2, 2023)
[9]	**Vice-Chair**	IEEE EMC Society Technical Committee 10 - Signal and Power Integrity (Aug. 2022-Aug. 2024)
[8]	**Secretary**	IEEE EMC Society Technical Committee 10 - Signal and Power Integrity (Aug. 2020-Aug. 2022)
[7]	**Chair**	IEEE Region 5 St. Louis Section (Since January 2023)
[6]	**Vice-Chair**	IEEE Region 5 St. Louis Section (Apr. 2022 ~ Dec. 2022)
[5]	**Session Chair**	2022 International Symposium on EMC, Signal & Power Integrity (Jul. 2022)
[4]	**Session Chair**	2021 International Symposium on EMC, Signal & Power Integrity (Aug. 2021)
[3]	**Session Chair**	2019 International Symposium on EMC, Signal & Power Integrity (Jul. 2019)
[2]	**Reviewer**	IEEE Transactions on Electromagnetic Compatibility / IEEE Transactions on Signal and Power Integrity / IEEE Transactions on Components, Packaging, and Manufacturing Technology/ Elsevier Journal of the International Measurement Confederation
[1]	**IEEE-Member**	IEEE-Eta Kappa Nu (HKN) Gamma Theta Branch Professional Member (Since 2019), IEEE Senior Member (Since Jul. 2024)

Department and University Service:

[11]	**Proposal Author**	Missouri S&T Semiconductor Engineering Bachelor of Science Proposal (2024)
[10]	**Committee Member**	Missouri S&T Electrical and Computer Engineering Department Scholarship Committee Member (Since February 2023)
[9]	**Committee Member**	Faculty Search Committee for Kummer Endowed Professor (2022)
[8]	**Judge**	2022 Senior Design Project II Poster Competition (October 2022)
[7]	**Evaluator**	Engineering Design & Development Presentation, Rolla Technical Institute (May 2022)
[6]	**Judge**	2022 Annual Missouri S&T Undergraduate Research Conference - Opportunities for Undergraduate Research Experiences Fellows Program, Missouri S&T (April 2022)
[5]	**Judge**	2020 Annual Missouri S&T Undergraduate Research Conference (April 2020)
[4]	**Judge**	IEEE Region 5 Student Paper Competition 2020, IEEE (April 2020)
[3]	**Host**	EMC lab tour host for Newburg R-II High School Students
[2]	**Judge**	2019 Annual Missouri S&T Undergraduate Research Conference (April 2019)
[1]	**Committee Member**	Faculty search committee for NTT Assistant Research Professor (2019)

Honors and Awards:

[14] IEEE-HKN Outstanding Young Professional Award (11/2023) [international award]
[13] College of Engineering and Computing Dean's Scholar (11/2023-08/2025) [regional award]
[12] 1st Herbert K. Mertel Young Professional Award, IEEE EMC Society (08/2023) [international award]
[11] DesignCon 2022 Early Career Best Paper Award, informa markets (01/2023) [international award]
[10] Young Scientist Award, 2022 APEMC, IEEE (09/2022) [international award]
[9] Best Student Paper Award, 2022 APEMC, IEEE (09/2022) [international award]
[8] Best SIPI Symposium Paper Award, IEEE 2022 EMC + SIPI Symposium (08/2022) [international award]
[7] DesignCon 2021 Early Career Best Paper Award, informa markets (06/2022) [international award]
[6] IEEE Region 5 Outstanding Young Professional (formerly GOLD) Award, IEEE (04/2022) [regional award]
[5] IEEE St. Louis Section Outstanding Young Engineer Award, IEEE (12/2021) [regional award]
[4] Best SIPI Student Paper Award, IEEE 2021 EMC + SIPI Symposium (08/2021) [international award]
[3] DesignCon 2020 Best Paper Award, informa markets (08/2021) [international award]
[2] Best SIPI Student Paper Award, IEEE 2020 EMC + SIPI Symposium (08/2020) [international award]
[1] Samsung Electro-Mechanics 1nside Edge Paper Award, Samsung (2014) [regional award]

Advising & Mentoring

Ph. D. Students:

[1]	Giorgi Maghlakelidze	(08/2019 ~ 02/2020)
[2]	Wei Zhang	(08/2019 ~ 07/2022)
[3]	Zhekun Peng	(08/2019 ~ Present)
[4]	Shaohui Yong	(08/2020 ~ 12/2020)
[5]	Siqi Bai	(08/2020 ~ 12/2020)
[6]	Yuandong Guo	(08/2020 ~ 05/2022)
[7]	Xu Wang	(08/2020 ~ 12/2022)
[9]	Ze Sun	(08/2020 ~ 07/2023)
[10]	Yuanzhuo Liu	(08/2020 ~ 11/2022)
[11]	Chaofeng Li	(08/2020 ~ 05/2024)
[12]	Manish Kizhakkeveettil Mathew	(09/2021 ~ Present)
[13]	Vanine Sabino De Moura	(08/2022 ~ 08/2023)
[14]	Seyedmehdi Mousavi	(09/2022 ~ Present)
[15]	Reza Vahdani	(01/2023 ~ Present)
[16]	Reza Asadi	(06/2023 ~ Present)
[17]	Ali Nikkhah	(08/2023 ~ 10/2023)

[18] Sathvika Bandi (01/2024 ~ Present)
[19] Mehdi Khaleghi (08/2024 ~ Present)

Postdoctoral Fellows:

[1] Bo Pu (07/2020 ~ 04/2021)
[2] Manje Yea (12/2021 ~ 04/2022)
[3] Reza Yazdani (01/2022 ~ 10/2023)
[4] Seyedmostafa Mousavi (01/2023 ~ 07/2024)
[5] Junyong Park (03/2023 ~ 08/2024)
[6] Hyunwook Park (06/2023 ~ Present)
[7] Daniel Commerou (08/2024 ~ Present)
[8] Shruti Sawant (08/2024 ~ Present)

Visiting Scholars:

[1] Jinhun Kim (KAIST) (03/2024 ~ 08/2024)

Lectures and Invited Presentations:

[32] Analysis on Power Via Induced Quasi-quarter-wavelength Resonance to Reduce Crosstalk, Intel Technical Seminar, Feb. 27, 2024
[31] Bottleneck and Directions in High-speed Digital Channels in Printed Circuit Boards, Plated Through-hole Via, DesignCon 2024 Rohde & Schwarz Sponsored Technical Seminar, Jan. 31, 2024
[30] Dielectric Constant (Dk) Extraction of Inhomogeneous Dielectric Layers (IDLs) and Via Modeling for Signal Integrity in High-Speed PCB, 2023 Korean Electromagnetic Engineering and Science (KIEES) Summer Conference, Goseong, Republic of Korea, Aug. 24, 2023
[29] Fluid Dielectric Constant Measurement, Open Compute Project (OCP) Immersion Cooling SI Workgroup, virtual workshop, Jun. 5, 2023
[28] Signal Integrity and Power Integrity, Dell EMC Corporation Workshop, Bengaluru, India, May 23, 2023
[27] Signal Integrity and Power Integrity, Indian Institute of Science (IISc) Workshop, Bengaluru, India, May 19, 2023
[26] Signal Integrity and Power Integrity, Mahidol University, Salaya, Thailand, May 16, 2023
[25] Signal Integrity and Power Integrity, IEEE MTT-Society Indian Institute of Technology Roorkee Student Branch Chapter, Roorkee, India, May 11, 2023
[24] Transverse Magnetic (TM) Mode Dielectric Resonator for Accurate Dk Extraction of Inhomogeneous Dielectric Layers (IDLs) for High-Speed PCB Modeling, Rohde & Schwarz DEMC global 2023 virtual conference, Feb. 8-9, 2023
[23] Far-end Crosstalk in High-Speed PCB Channels, Rohde & Schwarz DesignCon workshop, Feb.1, 2023
[22] Inhomogeneous Dielectric Materials of PCB – Dk,Df Extraction and Its Impact on Crosstalk, IEEE EMC Society Podcast, Oct.14, 2022
[21] Signal Integrity and Power Integrity, Seoul National University of Science and Technology, Invited Seminar, July 2022
[20] Signal Integrity for Automotive High-Speed Digital System, Korea Automotive Technology Institute, Invited Seminar, July 2022
[19] On-Chip ESD Protection Structure Modeling Methodology and Analysis of ESD to TSV for 2.5D and 3D IC, Samsung Global Technology Center EMC Workshop, Invited Lecture, July 2022
[18] ESD Protection Challenges in IC and Package, Korea Testing Laboratory Invited Seminar, July 2022
[17] On-Chip ESD Protection Structure Modeling Methodology, SK Hynix Package Development, Invited Seminar, July 2022
[16] Recent Challenges in EMC, Axonics, Invited Talk, May 26, 2022
[15] Semiconductor Packaging considering Signal Integrity and Power Integrity, Brewer Science, Invited Seminar, April 25, 2022
[14] Developing High-Quality Test Fixtures for De-embedding of S-Parameters, DesignCon 2023 Sponsored Session, Apr. 6, 2022
[13] Voltage-dependency Effect of Through-silicon Vias on the 2.5D and 3D IC System Power Distribution Network, Samsung Electronics Global Technology Center Seminar, Dec. 9, 2021
[12] Signal Integrity for High-Speed Digital System, IEEE St. Louis Section Awards Banquet Keynote Speech, Dec. 4, 2021

[11] Far-end Crosstalk Reduction in High-Speed Digital Systems, IEEE Iran Section, Nov. 18, 2021
[10] Far-end Crosstalk in Highspeed Digital Systems, Samsung Electronics SerDes Research Group, Oct. 20, 2021
[9] Radiated Emission Tests for High-frequency Router Systems in Class A: Discussion and Improvement, Samsung Electronics EMC Technology Workshop 2021, Jul. 8, 2021
[8] Analysis on Power Via Induced Quasi-quarter-wavelength Resonance to Reduce Crosstalk, EMC KOREA 2020, Jul. 21, 2020
[7] TSV Modeling Seminar, Cisco, CA, Jan. 31, 2020
[6] TSV Modeling Seminar, Facebook, CA, Jan. 27, 2020
[5] Non-linear Through-silicon Via (TSV) Capacitance Modeling for Bias-dependent 2.5D and 3D IC Power Distribution Network (PDN) Analysis, IEEE Singapore Chapter, May 14, 2018
[4] Through-silicon Via (TSV) Capacitance-voltage (CV) Hysteresis Modeling for 2.5D and 3D IC, Missouri S&T EMC Laboratory, Oct. 20, 2017
[3] Signal Integrity Analysis of Coaxial Connector for Automotive System, Missouri S&T EMC Laboratory, Oct. 20, 2017
[2] Lecture on SI/PI Design, Simulation and Measurement of High Speed, High Density PCB, DSO National Laboratories (Singapore), Apr. 27, 2015 ~ Apr. 29, 2015
[1] Design of High-speed Automotive Connectors, Silicon Image, Oct. 29, 2014

US Patent:

[5] "UTILIZING ABSORBER MATERIALS AS HIGH FREQUENCY TERMINATION IN ELECTRONIC CIRCUITS" 24MST020: US Provisional Patent Application No. 63/550,829, Filed On: Feb. 07, 2024
[4] "METHOD OF TERMINATING UNUSED PORTS DURING CROSSTALK MEASUREMENT" 24MST021: US Provisional Patent Application No. 63/550,816, Filed On: Feb. 07, 2024
[3] "MXENE-GRAPHENE FIELD EFFECT TRANSISTOR VIRUS SENSOR", Invention Disclosure: 21MST008-PCT, Patent Cooperation Treaty Application No.: PCT/US22/41497, Filed On: August 25, 2022, Pending
[2] "TRANSVERSE MAGNETIC MODE SPLIT POST DIELECTRIC RESONATOR", Invention Disclosure: 21MST022-PCT , Publication Number: WO/2023/129140, International Application No.: PCT/US2021/065387, Publication Date 06.07.2023
[1] "MAGNETIC FIELD GENERATING APPARATUS HAVING CANNON SHAPE AND MAGNETIC FIELD GENERATION METHOD THEREOF ", US 10,790,711 B2, Sep. 29, 2020.

Publications:

Journal Papers

[41] Junho Joo, Manish K Mathew, Arun Chada, Soumya Singh, PK Seema, Bhyrav Mutnury, DongHyun Kim, "Investigation of Voltage Regulator Module (VRM)-induced Noise to High-speed Signals with VRM Via Design Factors", May. 2024
[40] Junyong Park, Member, IEEE, Chaofeng Li, Student Member, IEEE, Eddie Mok, Joe Dickson, Joan Tourné, Aritharan (Hari) Thurairajaratnam, and DongHyun Kim, "A Novel Vertical Conductive Structure for Printed Circuit Boards and its Scalable Model", IEEE Transactions on Signal and Power Integrity, Apr. 2024
[39] Ze Sun, Jian Liu, Xiaoyan Xiong, DongHyun Kim, Daryl Beetner, Victor Khilkevich, "Extraction of Transmission Line Surface Roughness Using S-Parameter Measurements and Cross-Section Information", IEEE Transactions on Signal and Power Integrity, Feb. 2024
[38] Yanxiao Li, Zhekun Peng, Jiaoli Li, Congjie Wei, Shangbin Liu, Weixing Hao, Huanyu Cheng, Casey Burton, Yang Wang, Yue-Wern Huang, Chang-Soo Kim, Fang Yao Stephen Hou, DongHyun Kim, Chenglin Wu, "Wearable MXene-Graphene Sensing of Influenza and SARS-CoV-2 Virus in Air and Breath: From Lab to Clinic", Advanced Materials Technologies, Feb. 2024
[37] Junyong Park, DongHyun Kim, "Statistical Eye Diagrams for High-speed Interconnects of Packages: A Review", IEEE Access, Jan. 2024
[36] Junyong Park, Manho Lee, Shinyoung Park, Jonghoon Kim, Joungho Kim, DongHyun Kim, "Controller Area Network With Flexible Data Rate (CAN FD) Eye Diagram Prediction", IEEE Transactions on Electromagnetic Compatibility, Jan. 2024
[35] Ze Sun, Jian Liu, Xiaoyan Xiong, DongHyun Kim, Daryl Beetner, Victor Khilkevich, "Characterization of a Microstrip Line Referenced to a Meshed Return Plane Using 2-D Analysis", IEEE Transactions on Signal and Power Integrity, Dec. 2023

[34] Junyong Park, DongHyun Kim, “A Statistical Shmoo for a Decision Feedback Equalizer (DFE)”, IEEE Access, Dec. 2023

[33] Junyong Park, Youngwoo Kim, DongHyun Kim, “Accelerated Statistical Eye Diagram Estimation Method for Efficient Signal Integrity Analysis”, IEEE Access, Nov. 2023

[32] Ze Sun, Yansheng Wang, DongHyun Kim, “System-level Validation of Radiated Noise Source Characterization Using Only Near Field Magnitude Information”, IEEE Letters on Electromagnetic Compatibility Practice and Applications, Nov. 2023

[31] Xu Wang, Matthew Wu, Jagan Rajagopalan, Akshay Mohan, Donghyun Kim, Chulsoon Hwang, “Investigation of the Radiation Mechanism of Heatsinks Based on Characteristic Mode Theory”, IEEE TEMC, Aug. 2023

[30] Yuanzhuo Liu, Siqi Bai, Chaofeng Li, Vanine Sabino De Moura, Bichen Chen, Srinivas Venkataraman, Xu Wang, DongHyun Kim, "Inhomogeneous Dielectric Induced Skew Modeling of Twinax Cables", IEEE TSPI, May 2023

[29] Wei Zhang, Javad Meiguni, Yin Sun, Muqi Ouyang, Xin Yan, Xu Wang, Reza Yazdani, Daryl Beetner, DongHyun Kim, David Pommerenke, “Electromagnetic Transmit Array with Optical Control for Beamforming”, IEEE TAP, Apr. 2023

[28] Xu Wang, Anfeng Huang, Wei Zhang, Reza Yazdani, DongHyun Kim, Takashi Enomoto, Taketoshi Sekine, Kenji Araki, Jun Fan, Chulsoon Hwang, “Methodology for Analyzing Coupling Mechanisms in RFI Problems Based on PEEC”, IEEE TEMC, Apr. 2023

[27] Chaofeng Li, Kevin Cai, Muqi Ouyang, Qian Gao, Bidyut Sen, DongHyun Kim, “Mode-Decomposition-Based Equivalent Model of High-Speed Vias up to 100 GHz”, IEEE TSPI, Apr. 2023

[26] Yuanzhuo Liu, Yuandong Guo, Chaofeng Li, Siqi Bai, Bichen Chen, Srinivas Venkataraman, Xu Wang, Jun Fan, DongHyun Kim, “Phase Noise Analysis of Clock Generator by using Phase Noise Sensitivity (PNS)”, IEEE TSPI, Nov. 2022

[25] Zhekun Peng, Yang Xu, Manje Yea, Sergej Bub, Steffen Holland, DongHyun Kim, David Pommerenke, Daryl G Beetner, “Characterization and Modeling of Commercial ICs for System-Efficient ESD Design”, IEEE TEMC, Nov. 2022

[24] Yuanzhuo Liu, Shaohui Yong, Yuandong Guo, Jiayi He, Chaofeng Li, Xiaoning Ye, Jun Fan, Victor Khilkevich, DongHyun Kim, “An Empirical Modeling of Far-End Crosstalk and Insertion Loss in Microstrip Lines”, IEEE TSPI, Oct. 2022

[23] Siqi Bai, Yuanzhuo Liu, Jongjoo Lee, Bichen Chen, Srinivas Venkataraman, Xu Wang, Bo Pu, Jun Fan, DongHyun Kim, “Analysis of Power-via-Induced Quasi-Quarter-Wavelength Resonance to Reduce Crosstalk”, IEEE TSPI, Sept. 2022

[22] Yuanzhuo Liu, Shaohui Yong, Yuandong Guo, Jiayi He, Chaofeng Li, Xiaoning Ye, Jun Fan, DongHyun Kim, “Far-end Crosstalk Modeling and Prediction for Stripline with Inhomogeneous Dielectric Layers (IDLs)”, IEEE TSPI, Aug. 2022

[21] Muqi Ouyang, Xiao-Ding Cai, Bo Pu, Qian Gao, Srinath Penugonda, Chaofeng Li, Bidyut Sen, Chulsoon Hwang, DongHyun Kim, "Novel Formulations of Multi-Reflections and Their Applications to High-Speed Channel Design”, IEEE TEMC, May 2022

[20] Shaohui Yong, Srinath Penugonda, DongHyun Kim, Victor Khilkevich, Bo Pu, Xiaoning Ye, Qian Gao, Xiao Ding Cai, Bidyut Sen, Jun Fan, “Prepreg and Core Dielectric Permittivity (ε_r) Extraction for Fabricated Stripline'Far-End Crosstalk Modeling”, IEEE TEMC, May 2021

[19] Yanxiao Li, Zhekun Peng, Natalie J Holl, Md Rifat Hassan, John M Pappas, Congjie Wei, Omid Hoseini Izadi, Yang Wang, Xiangyang Dong, Cheng Wang, Yue-Wern Huang, DongHyun Kim, Chenglin Wu, “MXene–Graphene Field-Effect Transistor Sensing of Influenza Virus and SARS-CoV-2”, ACS Omega, Mar. 2021

[18] Giorgi Maghlakelidze, Li Shen, Harald Gossner, David Pommerenke, DongHyun Kim, "IC Pin Modeling and Mitigation of ESD-Induced Soft Failures", IEEE TEMC, Sept. 2020

[17] Wei Zhang, Javad Soleiman Meiguni, Kaustav Ghosh, Abhishek Patnaik, Morten Sørensen, Ahmad Hosseinbeig, David Pommerenke , Jacques Rollin, Jing Li, Qian Liu, Philippe Sochoux, DongHyun Kim, “System-Level EMI of an Artificial Router System With Multiple Radiators: Prediction and Validation”, IEEE TEMC, Aug. 2020

[16] Junyong Park, Shinyoung Park, Youngwoo Kim, Gapyeol Park, Hyunwook Park, Daehwan Lho, Kyungjun Cho, Seongsoo Lee, Dong-Hyun Kim, Joungho Kim, “Polynomial Model-Based Eye Diagram Estimation Methods for LFSR-Based Bit Streams in PRBS Test and Scrambling”, IEEE TEMC, Mar. 2019

[15] Seungtaek Jeong, Dong-Hyun Kim, Jinwook Song, Hongseok Kim, Seongsoo Lee, Chiuk Song, Jaehak Lee, Junyeop Song, Joungho Kim, “Smartwatch Strap Wireless Power Transfer System With Flexible PCB Coil and Shielding Material” IEEE TIE, Aug. 2018

[14] Seongsoo Lee, Dong-Hyun Kim, Yeonje Cho, Hongseok Kim, Chiuk Song, Seungtaek Jeong, Jinwook Song, Gyeyoung Park, Seokwoo Hong, Junyong Park, Kyungjun Cho, Hyunsuk Lee, Chulhun Seo, Seungyoung Ahn, Joungho Kim, “Low Leakage Electromagnetic Field Level and High Efficiency Using a Novel Hybrid Loop-array Design for Wireless High Power Transfer System” IEEE TIE, July 2018

[13] Junyong Park, Hyesoo Kim, Jonghoon J. Kim, Dong-Hyun Kim, Kyungjune Son, Subin Kim, Seongsoo Lee, Kyungjun Cho, Bumhee Bae, Dongho Ha, Michael Bae, Joungho Kim, “High-Frequency Electrical Characterization of a New Coaxial Silicone Rubber Socket for High-Bandwidth and High-Density Package Test” IEEE TCPMT, May 2018

[12] Jaemin Lim, Jonghyun Cho, Daniel H Jung, Jonghoon J Kim, Sumin Choi, Dong-Hyun Kim, Manho Lee, Joungho Kim, “Modeling and Analysis of TSV Noise Coupling Effects on RF LC-VCO and Shielding Structures in 3D IC” IEEE TEMC, Feb. 2018

[11] Chiuk Song, Hongseok Kim, Youngwoo Kim, Donghyun Kim, Seungtaek Jeong, Yeonje Cho, Seongsoo Lee, Seungyoung Ahn, Joungho Kim, “EMI Reduction Methods in Wireless Power Transfer System for Drone Electrical Charger using Tightly-coupled Three-phase Resonant Magnetic Field”, IEEE TIE, Jan. 2018

[10] Yeonje Cho, Seongsoo Lee, Dong-Hyun Kim, Hongseok Kim, Chiuk Song, Sunkyu Kong, Chulhun Seo, Joungho Kim, “Thin Hybrid Metamaterial Slab with Negative and Zero Permeability for High Efficiency and Low Electro-Magnetic Field in Wireless Power Transfer Systems”, IEEE TEMC, Sep. 2017

[9] Youngwoo Kim, Jonghyun Cho, Kyungjun Cho, Junyong Park, Subin Kim, Dong-Hyun Kim, Gapyeol Park, Srikrishna Sitaraman, Pulugurtha. Markondeya Raj, Rao R. Tummala, Joungho Kim, “Glass Interposer Electromagnetic Bandgap Structure with Defected Ground Plane for Broadband Suppression of Power/Ground Noise Coupling”, IEEE TCPMT, Aug. 2017

[8] Dong-Hyun Kim, Youngwoo Kim, Jounghyun Cho, Bumhee Bae, Junyoung Park, Hyunsuk Lee, Jaemin Lim, S. Piersanti, F. de Paulis, A. Orlandi Joungho Kim, “Through-Silicon Via (TSV) Capacitance-Voltage (CV) Hysteresis Modeling for 2.5D and 3D IC”, IEEE TCPMT, Mar. 2017

[7] Stefano Piersanti, Enza Pellegrino, Francesco De Paulis, Antonio Orlandi, Daniel H Jung, Dong-Hyun Kim, Joungho Kim, Jun Fan, “Algorithm for Extracting Parameters of the Coupling Capacitance Hysteresis Cycle for TSV Transient Modeling and Robustness Analysis”, IEEE TEMC, Nov. 2016

[6] Hongseok Kim, Chiuk Song, Daniel H. Jung, Dong-Hyun Kim, Jonghoon Kim, Seungyoung Ahn, Joungho Kim, “Coil Design and Measurement of Automotive Magnetic Field Resonant Wireless Power Transfer System for High Efficiency and Low EMF/EMI”, IEEE TMTT, Jan. 2016

[5] Yeonje Cho, Jonghoon J. Kim, Dong-Hyun Kim, Seongsoo Lee, Hongseok Kim, Chiuk Song, Sunkyu Kong, Seungyoung Ahn, Joungho Kim, “Thin PCB-Type Metamaterials for Improved Efficiency and Reduced EMF in Wireless Power Transfer Systems”, IEEE TMTT, Jan. 2016

[4] S. Piersanti, F. de Paulis, A. Orlandi, Dong-Hyun Kim, Joungho Kim, Jun Fan, “Equivalent Circuit Modeling of Dielectric Hysteresis Loops in Through Silicon Vias”, IEEE TCPMT, Oct. 2015

[3] Ji Hun Choi, Tae Kyun Kim, Jung Min Moon, Young Gwang Yoon,Byeong Woon Hwang, Dong Hyun Kim, Seok-Hee Lee, “Origin of Device Performance Enhancement of Junctionless Accumulation-Mode (JAM) Bulk FinFETs With High-κ Gate Spacers”, IEEE EDL, Oct. 2014

[2] Dong-Hyun Kim, Tae Kyun Kim, Young Gwang Yoon, Byeong-Woon Hwang, Yang-Kyu Choi, Byung Jin Cho, Seok-Hee Lee, “First Demonstration of Ultra-Thin SiGe-Channel Junctionless Accumulation-Mode (JAM) Bulk FinFETs on Si Substrate with PN Junction-Isolation Scheme”, IEEE J-EDS, May 2014

[1] Tae Kyun Kim, Dong Hyun Kim, Young Gwang Yoon, Jung Min Moon, Byeong Woon Hwang, Dong-Il Moon, Gi Seong Lee, Dong Wook Lee, Dong Eun Yoo, Hae Chul Hwang, Jin Soo Kim, Yang-Kyu Choi, Byung Jin Cho, Seok-Hee Lee, “First Demonstration of Junctionless Accumulation-Mode Bulk FinFETs with Robust Junction-Isolation”, IEEE EDL, Oct. 2013

Conference Papers

[74] Junyong Park, Chaofeng Li, Eddie Mok, Joe Dickson, Joan Tourné, Donghyun Kim, "Vertical Interconnect Technology in Silicon, Package, and Printed Circuit Board (PCB) with Coaxial Structure", 2024 IEEE Symposium on EMC+ SIPI, Aug 2024

[73] Zhekun Peng, Junyong Park, Chaofeng Li, Joey Stecher, Srinivas Venkataraman, Xu Wang, Granthana Rangaswamy, DongHyun (Bill) Kim, "Modeling of Power Distribution Network (PDN) Noise Coupling Induced Clock Phase Noise", 2024 IEEE Symposium on EMC+ SIPI, Aug 2024

[72] Chaofeng Li, Seyedmehdi Mousavi, Reza Asadi, Seyedmostafa Mousavi, Reza Vahdani, Xiaoning Ye, Kai Wang, DongHyun Kim, "DK and DF Characterization of Low-Loss Dielectric Liquid by Cylindrical Cavity Resonator", 2024 IEEE Symposium on EMC+ SIPI, Aug 2024

[71] Reza Asadi, Chaofeng Li, Seyedmostafa Mousavi, Seyed Moastafa Mousavi, Reza Vahdani, Xiaoning Ye, DongHyun Kim, "Design of the TM_{010} Mode Cylindrical Cavity Resonator for PCB Dielectric Characterization", 2024 IEEE Symposium on EMC+ SIPI, Aug 2024

[70] Mehdi Mousavi, Chaofeng Li, Reza Asadi, Seyedmostafa Mousavi, Reza Vahdani, Xiaoning Ye, Mina Esmaeelpour, DongHyun Kim, "Analytical Modeling of Partially-Filled TM_{010}-Mode Dielectric Resonator for Accurate DK and DF Extraction", 2024 IEEE Symposium on EMC+ SIPI, Aug 2024

[69] Manish K. Mathew, Kevin Cai, Chaofeng Li, Mehdi Mousavi, Shameem Ahmed, DongHyun Kim, "Novel Formulation for Generalization of Mixed-Mode S-Parameters for Coupled Differential High-Speed Digital Channels", 2024 IEEE Symposium on EMC+ SIPI, Aug 2024

[68] Chaofeng Li, Kevin Cai, Muqi Ouyang, Qian Gao, Bidyut Sen, DongHyun Kim, "Mode-Decomposition-Based Equivalent Model of High-Speed vias up to 100 GHz", 2024 IEEE Symposium on EMC+ SIPI, Aug 2024

[67] Junyong Park, Chaofeng Li, Eddie Mok, Joe Dickson, Joan Tourné, DongHyun (Bill) Kim, "New Vertical Connection in PCB and its Scalable Model", DesignCon 2024, Feb. 2024

[66] Chaofeng Li, Junyong Park, Aritharan (Hari) Thurairajaratnam, Eddie Mok, Joe Dickson, Joan Tourné, DongHyun (Bill) Kim, "Vertical Conductive Structure Technology: Simulation and Measurement", DesignCon 2024, Jan. 2024

[65] Reza Yazdani, Manish Kizhakkeveettil Mathew, Zhekun Peng, DongHyun Kim, "Reconfigurable Intelligent Surface (RIS) Design for 5G n260 Frequency Band", 2023 IEEE Symposium on EMC+ SIPI, July 2023

[64] Chaofeng Li, Yuandong Guo, Yuanzhuo Liu, Siqi Bai, Bichen Chen, Srinivas Venkataraman, Xu Wang, DongHyun Bill Kim, "Undesired-resonance Analysis and Modeling of Differential Signals Due to Narrow Ground Lines Without Stitching Vias", 2023 IEEE Symposium on EMC+ SIPI, July 2023

[63] Chaofeng Li, Kevin Cai, Mehdi Mousavi, Manish Kizhakkeveettil Mathew, Bidyut Sen, DongHyun Bill Kim, "Simplified Equivalent Golden Finger Port Setup for Fast and Accurate High-Speed Channel Simulation", 2023 IEEE Symposium on EMC+ SIPI, July 2023

[62] Chaofeng Li, Kevin Cai, Manish Kizhakkeveettil Mathew, Seyedmehdi Mousavi, Muqi Ouyang, Bidyut Sen, DongHyun Bill Kim, "High-Speed Differential Via Optimization using a High-Accuracy and High-Bandwidth Via Model", 2023 IEEE Symposium on EMC+ SIPI, July 2023

[61] Reza Asadi, Hadi Aliakbarian, Amir Sahraei, Reza Yazdani, DongHyun Kim, "Analysis on the Effect of Averaging Duration on Radio Frequency Dosimetry in Residential Environments", 2023 IEEE Symposium on EMC+ SIPI, July 2023

[60] Zhekun Peng, Wei Zhang, Jong-Hwa Kwon, DongHyun Kim, "Analysis on Extraction of Potential Radiated Emission Limit line for Data Center Equipment from 10 GHz to 40 GHz", 2023 IEEE Symposium on EMC+ SIPI, July 2023

[59] Junho Joo, Manish K Mathew, Soumya Singh, PK Seema, Arun Chada, Bhyrav Mutnury, Chulsoon Hwang, DongHyun Kim, "Analysis of Voltage Regulator Module (VRM) Noise Coupling to High-Speed Signals with VRM Via Designs", 2023 APEMC/INCEMIC, May 2023

[58] Manish K Mathew, Xin Yan, Yuandong Guo, Tanner Fokkens, Li Shen, Daryl Beetner, DongHyun Kim, "Analysis and Modeling Framework of Common Mode Noise in a Three-phase Motor System", 2023 APEMC/INCEMIC, May 2023

[57] Chaofeng Li, Kevin Cai, Muqi Ouyang, Manish Kizhakkeveettil Mathew, Mehdi Mousav, Bidyut Sen, DongHyun Kim, "Mode-decomposition-based Equivalent Via (MEV) Model and MEV Model Application Range Analysis", 2023 APEMC/INCEMIC, May 2023

[56] Wei Zhang, Zhekun Peng, Daniel Hyunsuk Jung, DongHyun Kim, "Measurement-based Bias Voltage, Temperature, and Light Intensity Effect on Through-silicon Vias (TSVs)", DesignCon 2023, Jan 2023

[55] Mohaddeseh Shahrbandian, Hadi Aliakbarian, Reza Yazdani, DongHyun Bill Kim, “High-Gain Fan-Beam Leaky-Wave Antenna Using Symmetrical Long-slots for 5G Millimeter-Wave Base Station Applications”, 2022 6th International Conference on MMWaTT, Dec. 2022

[54] Yuandong Guo, Bo Pu, DongHyun Kim, Jun Fan, “De-Embedding for Coupled Three-Port Devices”, 2022 Asia-Pacific International Symposium on Electromagnetic Compatibility (APEMC), Sept. 2022

[53] Yuandong Guo, DongHyun Kim, Yuanzhuo Liu, Xiaoning Ye, Jimmy Hsu, Jun Fan, “Insertion Loss Reduction Using Rounded Corners to Mitigate Surface Roughness Effect in PCB Transmission Lines”, 2022 Asia-Pacific International Symposium on Electromagnetic Compatibility (APEMC), Sept. 2022

[52] Chaofeng Li, Biyao Zhao, Bo Pu, Xu Wang, DongHyun Kim, Jun Fan, “PEEC-Based On-chip PDN Impedance Modeling Using Layered Green’s Function”, 2022 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity (EMCSI), Aug. 2022

[51] Muqi Ouyang, Kevin Cai, Chaofeng Li, Anna Gao, Felen Fu, Hannah Bian, Bidyut Sen, DongHyun Kim, “Optimizing the Placement of Non-Functional Pads on Signal Vias Using Multiple Reflection Analysis”, 2022 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity (EMCSI), Aug. 2022

[50] Ze Sun, Jian Liu, Xiaoyan Xiong, Victor Khilkevich, DongHyun Kim, Darvl Beetner, “Extraction of Stripline Surface Roughness Using Cross-section Information and S-parameter Measurements”, 2022 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity (EMCSI), Aug. 2022

[49] Ze Sun, Manish Kizhakkeveettil Mathew, Ryan From, DongHyun Kim, “Monte Carlo Particle Simulation of Avalanche Breakdown in a Reverse Biased Diode with Full Band Structure”, 2022 IEEE 72nd Electronic Components and Technology Conference (ECTC), May 2022

[48] Yuanzhuo Liu, Yuandong Guo, Chaofeng Li, Xiaoning Ye, DongHyun Kim, “Integration-based Method for Surface Roughness Modeling of Copper Foils”, DesignCon 2022, Apr. 2022

[47] Yuandong Guo, Yuanzhuo Liu, Chaofeng Li, Xiaoning Ye, DongHyun Kim, “A Comprehensive Study about Inhomogeneous Dielectric Layers (IDLs) and the Impacts on Far-End Crosstalk of High-Speed PCB Striplines”, DesignCon 2022, Apr. 2022

[46] Zhekun Peng, Omid Hoseini Izadi, Li Shen, Manje Yea, Pengyu Wei, Javad Meiguni, Ali Foudazi, Shubhankar Marathe, Ki-hyuk Kim, DongHyun Kim, “On-chip ESD Protection Structure Modeling Methodology”, DesignCon 2022, Apr. 2022

[45] Philippe Sochoux, David Pommerenke, DongHyun Kim, Bertwin Novak, Franz Gabalier, Xu Wang, Kaustav Ghosh, Sameer Walunj, Federico Centola, Tamar Makharashvili, Xiao Li, “EMI Qualification of QSFP & OSFP Electrical/Optical Modules”, DesignCon 2022, Apr. 2022

[44] Zhekun Peng, Wei Zhang, DongHyun Kim, “Analysis of Electro-static Discharge to Through-silicon Via”, DesignCon 2021, Aug. 2021

[43] Wei Zhang, Xu Wang, Zhekun Peng, Bo Pu, DongHyun Kim, “Voltage-dependency Effect of Through-silicon Vias on the Power Distribution Network”, DesignCon 2021, Aug. 2021

[42] Muqi Ouyang, Bo Pu, Kevin Cai, Anna Gao, Srinath Penugonda, Liang Liu, Bidyut Sen, DongHyun Kim, “An Investigation on Multiple Reflections and Group Delay Behavior in High-Speed System Designs”, 2021 IEEE International Joint EMC/SI/PI and EMC Europe Symposium, Jul. 2021

[41] Yuandong Guo, DongHyun Kim, Jiayi He, Shaohui Yong, Yuanzhuo Liu, Bo Pu, Xiaoning Ye, Jun Fan, “The Simulated TDR Impedance In PCB Material Characterization”, 2021 IEEE International Joint EMC/SI/PI and EMC Europe Symposium, Jul. 2021

[40] Yuanzhuo Liu, Shaohui Yong, Yuandong Guo, Jiayi He, Liang Liu, Nick Kutheis, Albert Sutono, Vijay Kunda, Amy Luoh, Yunhui Chu, Xiaoning Ye, DongHyun Kim, Jun Fan, “Far-End Crosstalk Analysis for Stripline with Inhomogeneous Dielectric Layers (IDL)”, 2021 IEEE International Joint EMC/SI/PI and EMC Europe Symposium, Jul. 2021

[39] Yuanzhuo Liu, Siqi Bai, Bo Pu, Jongjoo Lee, DongHyun Kim, “Analysis on Unintentional Resonances in High-Speed Signals from Non-Ideal Routing Stub”, 2021 IEEE International Joint EMC/SI/PI and EMC Europe Symposium, Jul. 2021

[38] Wei Zhang, Zhekun Peng, Xu Wang, DongHyun Kim, James Drewniak, “Radiated Emission Tests for High-frequency Router Systems in Class A: Discussion and Improvement”, 2021 IEEE International Joint EMC/SI/PI and EMC Europe Symposium, Jul. 2021

[37] Ze Sun, Yansheng Wang, Warren Lee, Ken Wu, DongHyun Kim, “Radiated Noise Source Characterization Based on

Magnitude-Only Near Field", 2021 IEEE International Joint EMC/SI/PI and EMC Europe Symposium, Jul. 2021

[36] Yuandong Guo, Shaohui Yong, Yuanzhuo Liu, Jiayi He, Bo Pu, Xiaoning Ye, Albert Sutono, Vijay Kunda, Amy Luoh, DongHyun Kim, Jun Fan, "Far-End Crosstalk Control Strategy for High-Volume High-Speed PCB Manufacturing: The Concept of Critical Resin Content Percent", 2021 IEEE International Joint EMC/SI/PI and EMC Europe Symposium, Jul. 2021

[35] Ze Sun, Xu Wang, Chunyu Wu, Ben Kim, DongHyun Kim, Jun Fan, "Estimating Electromagnetic Emissions from a Site Installation with Multiple Racks of Server Equipment", 2021 IEEE International Joint EMC/SI/PI and EMC Europe Symposium, Jul. 2021

[34] Yuanzhuo Liu, Siqi Bai, Bo Pu, Zhifei Xu, Bichen Chen, Srinivas Venkataraman, Xu Wang, Jun Fan, DongHyun Kim "Root Cause Analysis for the Phase Noise of the Clock Generator", 2021 IEEE International Joint EMC/SI/PI and EMC Europe Symposium, Jul. 2021

[33] Omid Hoseini Izadi, David Pommerenke, DongHyun Kim, "A New Current Probe for Measuring Transient Events Under Data Traffic", 2020 42nd Annual EOS/ESD Symposium, Sep. 2020

[32] Junda Wang, Chaohui Xu, Shuai Zhong, Siqi Bai, JongJoo Lee, DongHyun Kim, "Differential Via Designs for Crosstalk Reduction in High-Speed PCBs", 2020 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity, Jul. 2020

[31] Runbing Hua, Omid Hoseini, Zhekun Peng, Hideki Shumiya, Shota Konno, Kenji Araki, David Pommerenke, Donghyun Kim, "Commercial USB IC Soft-Failure Sensitivity Measurement Method and Trend Analysis", 2020 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity, Jul. 2020

[30] Yuandong Guo, DongHyun Kim, Jiayi He, Shaohui Yong, Yuanzhuo Liu, Xiaoning Ye, Jun Fan, "Limitations of First-Order Surface Impedance Boundary Condition and Its Effect on 2D Simulations for PCB Transmission Lines", 2020 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity, Jul. 2020

[29] Yuandong Guo, DongHyun Kim, Jiayi He, Xiaoning Ye, Albert Sutono, Vijay Kunda, Amy Luoh, Zurab Kiguradze, Li Shen, Jun Fan, "Robust Extended Unterminated Line (EUL) Crosstalk Characterization Techniques for High-Speed Interconnect", 2020 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity, Jul. 2020

[28] Hossein Rezaei, Zhekun Peng, Shubhankar Marathe, David Pommerenke, Cheung Wei Lam, Ali Foudazi, Daryl Beetner, DongHyun Kim "Experimental characterization and methodology for full-wave modeling of ESD to displays", 2020 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity, Jul. 2020

[27] Zhekun Peng, Shubhankar Marathe, Hossein Rezaei, Giorgi Maghlakelidze, David Pommerenke, Ali Foudazi, Cheung-Wei Lam, Daryl Beetner, DongHyun Kim, "Trend Analysis of Dissipated Electrostatic Discharge Energy in Touchscreen Displays", 2020 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity, Jul. 2020

[26] Omid Hoseini Izadi, Hideki Shumiya, Shota Konno, Kenji Araki, David Pommerenke, DongHyun Kim, "Analysis of CPU Loading Effect On ESD Susceptibility", 2020 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity, Jul. 2020

[25] DongHyun Kim, Siqi Bai, Jongjoo Lee, Junda Wang, Jun Wang, Junyong Park, Bichen Chen, Xu Wang, Srinivas Venkataraman, Jun Fan, "Analysis on Power Via Induced Quasi-Quarter-Wavelength Resonance to Reduce Crosstalk", DesignCon 2020, Jan. 2020

[24] … [1] *To avoid going over 11 pages, older publication list is available upon request at dkim@mst.edu*

Teaching Evaluation:

Terms	Course	Level	Responded / Enrolled	Evaluation	Remark
FS2019	EE 3250: Electronic and Photonic Devices	Junior	11/11	2.91/4.0	New
SP2020	EE 6140: Advanced RF & Time Domain Measurements	Graduate	8/11	3.75/4.0	New
FS2020	EE 3250: Electronic and Photonic Devices	Junior	6/9	3.50/4.0	
SP2021	EE 6140: Advanced RF & Time Domain Measurements	Graduate	5/7	3.42/4.0	New
FS2021	EE 2200: Introduction to Electronic Devices	Sophomore	9/15	3.78/4.0	
SP2022	EE 6140: Advanced RF & Time Domain Measurements	Graduate	11/14	3.71/4.0	
FS2022	EE 3250: Electronic and Photonic Devices	Junior	11/16	3.91/4.0	
SP2023	EE 2200: Introduction to Electronic Devices	Sophomore	12/25	3.42/4.0	
FS2023	EE 3250: Electronic and Photonic Devices	Junior	8/8	3.62/4.0	
SP2024	EE 6140: Advanced RF & Time Domain Measurements	Graduate	14/18	3.46/4.0	
FS2024	CompE 5210: Introduction to VLSI Design	Graduate	- /10	-	New

Research Grant and Contracts:

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024 **	Total (2019 to current)
Total Awarded	$1,383,666	$2,587,506	$1,192,000	$1,654,073	$ 1,151,000	$7,423,739
Shared Award Credit	$374,971	$718,500	$409,600	$638,017	$ 428,500	$2,569,588
Total Expenditure	$358,868	$1,374,558	$1,622,933	$1,604,881	$1,598,899	$6,560,140
Expenditure Shared Credit	$101,238	$424,733	$587,107	$707,430	$614,462	$2,434,972

**Fiscal year (FY) is defined as July 1 through June 30. For example, FY2019 is from July 1, 2018 through June 30, 2019.*
FY 2024 information is from July 1,2019 to September 28, 2023, only.
*** updated up to: 08/15/2024*

List of Current and Past Research Grant and Contracts as PI

	Sponsor	My Share (%)	Affiliation
1	NIH MBArC	30	Independent
2	Facebook/Meta	100	Independent
3	Hyundai Mobis	100	Independent
4	Amazon (ESD)	100	Independent
5	Intel (Oregon)	55	NSF I/UCRC Center for Electromagnetic Compatibility
6	Cisco (EMC)	40	NSF I/UCRC Center for Electromagnetic Compatibility
7	Cisco (SI)	55	NSF I/UCRC Center for Electromagnetic Compatibility
8	LG	40	NSF I/UCRC Center for Electromagnetic Compatibility
9	Google (EMC)	40	NSF I/UCRC Center for Electromagnetic Compatibility
10	Intel GmbH	40	NSF I/UCRC Center for Electromagnetic Compatibility
11	Apple (ESD)	40	NSF I/UCRC Center for Electromagnetic Compatibility
12	Boeing Company	40	NSF I/UCRC Center for Electromagnetic Compatibility
13	Sony (ESD)	40	NSF I/UCRC Center for Electromagnetic Compatibility

List of Current and Past Research Grant and Contracts as Co-PI

	Sponsor	My Share (%)	Affiliation
1	Hyundai Mobis	40	Independent
2	NSF Phase III IUCRC	30	NSF I/UCRC Center for Electromagnetic Compatibility
3	Cisco (EMC)	20	NSF I/UCRC Center for Electromagnetic Compatibility
4	Cisco (PDN)	20	NSF I/UCRC Center for Electromagnetic Compatibility
5	Cisco (Material)	20	NSF I/UCRC Center for Electromagnetic Compatibility
6	Boeing	20	NSF I/UCRC Center for Electromagnetic Compatibility
7	John Deere	20	NSF I/UCRC Center for Electromagnetic Compatibility
8	Sony (EMCs-RFI)	20	NSF I/UCRC Center for Electromagnetic Compatibility
9	Samsung	20	NSF I/UCRC Center for Electromagnetic Compatibility
10	Juniper Networks	20	NSF I/UCRC Center for Electromagnetic Compatibility
11	Huwin	20	NSF I/UCRC Center for Electromagnetic Compatibility
12	LG	20	NSF I/UCRC Center for Electromagnetic Compatibility
13	Nexperia	20	NSF I/UCRC Center for Electromagnetic Compatibility
14	US Army	20	NSF I/UCRC Center for Electromagnetic Compatibility
15	Apple (ESD)	20	NSF I/UCRC Center for Electromagnetic Compatibility
16	Cadence	20	NSF I/UCRC Center for Electromagnetic Compatibility
17	NIH MBArC	30	Independent