

Curriculum Vitae

DongHyun (Bill) Kim

Electromagnetic Compatibility Laboratory, Missouri S&T
4000 Enterprise Dr, Rolla, MO, United States 65401
Phone: +1-573-341-4262 **E-mail:** dkim@mst.edu

Research Interest:

Signal Integrity (SI), Power Integrity (PI) and Electromagnetic Compatibility (EMC)

- Through-silicon via (TSV) capacitance-voltage (CV) modeling for 2.5D and 3D IC
- Metal-oxide-semiconductor (MOS) structure modeling for high bandwidth memory (HBM) systems
- Automotive connectors
- High current PCB analysis

Semiconductor Devices

- Si and SiGe junctionless finFET fabrication
- FinFET fabrication using junction-isolation scheme on bulk wafers
- Temperature-dependent transistor characteristics

Education:

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|-------------------|--|
| 09/2014 – 08/2018 | Ph.D. School of Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea (Advisor: Professor 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: Professor 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:

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|-------------------|--|
| 09/2019 – Present | Assistant Professor , Department of Electrical and Computer Engineering, Missouri University Science and Technology, Rolla, MO (Formerly University of Missouri Rolla, UMR) |
| 12/2018 – 08/2019 | Visiting Research Assistant Professor , Department of Electrical and Computer Engineering, Missouri University of Science and Technology, Rolla, MO |

Professional Activities:

Technical Program Chair, 2019 IEEE International Symposium on Electromagnetic Compatibility, Signal & Power Integrity

Reviewer, IEEE Transactions on Electromagnetic Compatibility (10) / IEEE Transactions on Components, Packaging, and Manufacturing Technology (4) / Elsevier Journal of the International Measurement Confederation (1)

Advising & Mentoring

Ph. D.

- [1] Giorgi Maghlakelidze (08/2019 ~ Present)
- [2] Wei Zhang (08/2019 ~ Present)
- [3] Zhekun Peng (08/2019 ~ Present)

B.S.

- [1] Taylor Ornelas (03/2019 ~ Present)

Lectures and Invited Presentations:

- [1] Non-linear Through-silicon Via (TSV) Capacitance Modeling for Bias-dependent 2.5D and 3D IC Power Distribution Network (PDN) Analysis, Nanyang Technological University, Singapore, May 14, 2018
- [2] Through-silicon Via (TSV) Capacitance-voltage (CV) Hysteresis Modeling for 2.5D and 3D IC, Missouri S&T EMC Laboratory, Rolla, MO, USA, Oct. 20, 2017
- [3] Signal Integrity Analysis of Coaxial Connector for Automotive System, Missouri S&T EMC Laboratory, Rolla, MO, USA, Oct. 20, 2017
- [4] Lecture on SI/PI Design, Simulation and Measurement of High Speed, High Density PCB, DSO National Laboratories, Singapore, Apr. 27, 2015 ~ Apr. 29, 2015
- [5] Design of High-speed Automotive Connectors, Silicon Image, Sunnyvale, CA, USA, Oct. 29, 2014

US Patent:

- [1] Joung Ho Kim, Bom Son Lee, Dong Hyun Kim, "MAGNETIC FIELD GENERATING APPARATUS HAVING CANNON SHAPE AND MAGNETIC FIELD GENERATION METHOD THEREOF," US 20,190,199,146, June 27, 2019.

Publications:

Journal Papers

- [1] 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, May 2019
- [2] 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

- [3] 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
- [4] 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
- [5] 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
- [6] Yeonje Cho, Seongsoo Lee, Dong-Hyun Kim, Hongseok Kim, Chiuk Song, Sunkyu Kong, Chulhun Seo, and 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
- [7] Youngwoo Kim, Jonghyun Cho, Kyungjun Cho, Junyong Park, Subin Kim, Dong-Hyun Kim, Gapyeol Park, Srikrishna Sitaraman, Pulugurtha. Markondeya Raj, Rao R. Tummala, and 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, Junyong Park, Hyunsuk Lee, Jaemin Lim, S. Piersanti, F. de Paulis, A. Orlandi and Joungho Kim, “Through-Silicon Via (TSV) Capacitance-Voltage (CV) Hysteresis Modeling for 2.5D and 3D IC”, IEEE TCPMT, Mar. 2017
- [9] Hongseok Kim, Chiuk Song, Daniel H. Jung, Dong-Hyun Kim, Jonghoon Kim, Seungyoung Ahn and 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
- [10] Yeonje Cho, Jonghoon J. Kim, Dong-Hyun Kim, Seongsoo Lee, Hongseok Kim, Chiuk Song, Sunkyu Kong, Seungyoung Ahn and Joungho Kim, “Thin PCB-Type Metamaterials for Improved Efficiency and Reduced EMF in Wireless Power Transfer Systems”, IEEE TMTT, Jan. 2016
- [11] S. Piersanti, F. de Paulis, A. Orlandi, Dong-Hyun Kim, Joungho Kim and Jun Fan, “Equivalent Circuit Modeling of Dielectric Hysteresis Loops in Through Silicon Vias”, IEEE TCPMT, Oct. 2015
- [12] Ji Hun Choi, Tae Kyun Kim, Jung Min Moon, Young Gwang Yoon, Byeong Woon Hwang, Dong Hyun Kim, and Seok-Hee Lee, “Origin of Device Performance Enhancement of Junctionless Accumulation-Mode (JAM) Bulk FinFETs With High- κ Gate Spacers”, IEEE EDL, Oct. 2014
- [13] Dong-Hyun Kim, Tae Kyun Kim, Young Gwang Yoon, Byeong-Woon Hwang, Yang-Kyu Choi, Byung Jin Cho, and 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
- [14] Tae Kyun Kim, Dong Hyun Kim, Young Gwang Yoon, Jung Min Moon, Byeong Woon Hwang, Dong-II Moon, Gi Seong Lee, Dong Wook Lee, Dong Eun Yoo, Hae Chul Hwang, Jin Soo Kim, Yang-Kyu Choi, Byung Jin Cho, and Seok-Hee Lee, “First Demonstration of Junctionless Accumulation-Mode Bulk FinFETs with Robust Junction-Isolation”, IEEE EDL, Oct. 2013

Conference Papers

- [1] Kyunghwan Song, Subin Kim, Seungtaek Jeong, Dong-Hyun Kim, Jin Heo, Kyumin Han and Yusup

- Jung and Joungho Kim, "Simulation, Measurement and Mathematical Estimation of Magnetic Field Shielding Effectiveness of Sputtered Shielding Materials using Spiral Coils", EMC 2018, Jul. 2018
- [2] Dong-Hyun Kim, Subin Kim, Junyong Park, Youngwoo Kim, Sumin Choi, Kyungjun Cho and Joungho Kim, "Bias-dependent Power Distribution Network Impedance Analysis with MOS Capacitor", Joint IEEE EMC & APEMC Symposium, May 2018
- [3] Sumin Choi, Heegon Kim, Junyong Park, Dong-Hyun Kim, Daniel H. Jung, Jaemin Lim, Kyungjun Cho and Joungho Kim, "Estimation and Analysis of Crosstalk Effects in High-Bandwidth Memory Channel", Joint IEEE EMC & APEMC Symposium, May 2018
- [4] Junyong Park, Dong-Hyun Kim, Youngwoo Kim, Sumin Choi and Joungho Kim, "Eye-Diagram Estimation with Stochastic Model for 8B/10B Encoded High-Speed Channel", Joint IEEE EMC & APEMC Symposium, May 2018
- [5] Junyong Park, Huijin Song, Dong-Hyun Kim, Sumin Choi and Joungho Kim, "Statistical Eye-Diagram Estimation Method for High-Speed Channel with N-Tap Decision Feedback Equalizer (DFE)", Joint IEEE EMC & APEMC Symposium, May 2018
- [6] Dong-Hyun Kim, Hyunsuk Lee, Jonghoon Kim, Jung-Min Park, Un-ho Kim, Kun-ho Kim, Yeok-Hwan Jeon, Hyeok-Cheol Kwon, Hoon Kim, Maeng-Ki Song and Joungho Kim, "Signal Integrity Analysis of Machine Pressed Coaxial Connector for Automotive System", EPEPS 2017, Oct. 2017
- [7] Kyunghwan Song, Yeonje Cho, Subin Kim, Seungtaek Jeong, Dong-Hyun Kim, Hongseok Kim, Bongsuk Kim, Jin Heo, Yusup Jung and Joungho Kim, "Measurement and Comparative Analysis of Shielding Effectiveness of Different Sputtered Materials", EMC 2017, Aug. 2017
- [8] Chiuk Song, Dong-hyun Kim, Kibum Yoon, Sunkyu Kong, Yeonje Cho, Seongsoo Lee, Seungtaek Jeong, Kyunghwan Song, Seokwoo Hong, Jonghoon Kim and Joungho Kim, "Low EMI high-k Tightly-coupled Resonant Magnetic Field (TCR-HMF) Charger with Impedance Design for a 3-wheeler Vehicle", WPTC 2017, Jun. 2017
- [9] Seokwoo Hong, Seongsoo Lee, Seungtaek Jeong, Dong-Hyun Kim, Jinwook Song, Hongseok Kim and Joungho Kim, "Dual-Directional Near Field Communication Tag Antenna with Effective Magnetic Field Isolation from Wireless Power Transfer System", WPTC 2017, Jun. 2017
- [10] Dong-Hyun Kim, Hyunsuk Lee, Hongseok Kim, Jonghoon Kim, Jung-Min Park, Ji-min Kim, Kyung-Nam Lee, Jong-Hoon Woo, Hyeok-Cheol Kwon, Hoon Kim, and Joungho Kim, "Signal Integrity Analysis of Vertical Dual Port Coaxial Connector for Automotive System", EPEPS 2016, Oct. 2016
- [11] Hongseok Kim, Seungtaek Jeong, Dong-Hyun Kim, Young-Il Kim, In-Myoung Kim, and Joungho Kim, "Selective Harmonic Elimination Method of Radiation Noise from Automotive Wireless Power Transfer System Using Active Rectifier", EPEPS 2016, Oct. 2016
- [12] Sunkyu Kong, Bumhee Bae, Dong-Hyun Kim, Hongseok Kim, Chiuk Song, and Joungho Kim, "Electromagnetic Interference on Analog-to-Digital Converters from High-Power Wireless Power Transfer System for Automotive Charger", EMC 2016, Jul. 2016
- [13] Dong-Hyun Kim, Heegon Kim, Jaemin Lim, Yeseul Jeon, Koh Wee Jin, Chang Weng Yew Richard and Joungho Kim, "Analysis of Vertical PCB Connector Induced Via Stub Reduction in High Speed Serial Link", APEMC 2016, May 2016
- [14] Jaemin Lim, Heeon Kim, Dong-Hyun Kim, Yeseul Jeon, Koh Wee Jin, Chang Weng Yew Richard, and Joungho Kim, "Analysis on Via Design for Impedance Mismatch Minimization in High Speed Channel", APEMC 2016, May 2016
- [15] Hongseok Kim, Jonghoon Kim, Seungtaek Jeong, Seongsoo Lee, Yeonje Cho, Dong-Hyun Kim, and Joungho Kim, "EMI Reduction in Wireless Power Transfer System Using Spread Spectrum Frequency Dithering", WPTC 2016, Mar. 2016
- [16] S. Piersanti, F. de Paulis, A. Orlandi, Dong-Hyun Kim, Jonghyun Cho and Joungho Kim, "Through Silicon Via Time Domain Crosstalk Modeling Considering Hysteretic Coupling Capacitance", Joint

- EMC and EMC Europe 2015, Sep. 2015
- [17] Hongseok Kim, Chiuk Song, Dong-Hyun Kim and Joungho Kim, “Design of Conductive Shield for Wireless Power Transfer System for Electric Vehicle Considering Automotive Body”, Joint EMC and EMC Europe 2015, Sep. 2015
 - [18] Hyunsuk Lee, Heegon Kim, Sumin Choi, Dong-Hyun Kim, Kyungjun Cho and Joungho Kim, “Signal Integrity Design of Bump-less Interconnection for High-speed Signaling in 2.5D and 3D IC”, APEMC 2015, Aug. 2015
 - [19] Younghwan Kwack, Hongseok Kim, Chiuk Song, Minkang Moon, Dong-Hyun Kim, Beomshik Kim, Eulyong Kim and Joungho Kim, “EMI Modeling Method of Interior Permanent Magnet Synchronous Motor for Hybrid Electric Vehicle Drive System Considering Parasitic and Dynamic Parameters”, APEMC 2015, Aug. 2015
 - [20] Minkang Moon, Hongseok Kim, Jinwook Song, Younghwan Kwack, Dong-Hyun Kim, Beomshik Kim, Eulyong Kim and Joungho Kim, “Modeling and Analysis of Return Paths of Common Mode EMI Noise Currents From Motor Drive System in Hybrid Electric Vehicle”, APEMC 2015, Aug. 2015
 - [21] Yeonje Cho, Hongseok Kim, Chiuk Song, Jinwook Song, Dong-Hyun Kim, Hyoungjun Kim, Chulhun Seo and Joungho Kim, “Ultra-thin Printed Circuit Board Metamaterial for High Efficiency Wireless Power Transfer”, WPTC 2015, Jul. 2015
 - [22] Jinwook Song, Sukjin Kim, Bumhee Bae, Hongseok Kim, Jonghoon J. Kim, Dong-Hyun Bill Kim and Joungho Kim, “Analysis of Wireless Power Transfer System Design on Active Silicon Interposer for Low Voltage Applications in 3D-IC”, EPEPS 2014, May 2015