

2020 IEEE 24th Workshop on Signal and Power Integrity (SPI 2020)

**Cologne, Germany
17-20 May 2020**



**IEEE Catalog Number: CFP20SPI-POD
ISBN: 978-1-7281-7595-9**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP20SPI-POD
ISBN (Print-On-Demand):	978-1-7281-7595-9
ISBN (Online):	978-1-7281-4204-3

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

SPI 2020

24th IEEE Workshop On Signal And Power Integrity

Conference Program (1/2)

High Speed Design and Signal Integrity Analysis

Signal Integrity and Compliance Test of DSI and CSI2 Serial Interface over MIPI D-PHY 1

A. Pandey

A Generalised Approach for Analysing the Impact of Supply Noise in MOS Amplifiers 5

V. K. Sharma, J. N. Tripathi, H. Shrimali

Using Group Velocity for Correct Determination of Phase Coefficient Without Initial Phase Assumption 9

K. Lomakin, K. Helmreich, G. Gold

Parasitic Probe Effects in Measurements of Coplanar Waveguides with Narrow Ground Width 12

G. N. Phung, U. Arz

Validation and Performance Evaluation of High Speed Connector Model for Channel Design at 56 Gbps and Above 16

F. de Paulis, M. Resso, R. Rabinovich, T. Wang-Lee, R. Mellitz, O.J. Danzy

Power Distribution Networks

Optimized Power Delivery Performance Using Plane Terminations 20

E. Koether, K. Skytte, S. Farrahi, M. Mechaik, I. Novak

Detecting Resistive-Open Defects of TSVs in Power Distribution Network of 3D-IC 24

K. Hachiya, K. Atshushi

Power Distribution Network Modeling and Design of Re-Distribution Layer in DDR Application 28

C.-K. Chan, T.-M. Wu, M.-L. Wu, G.-J. Fan, C. Shiah, N. C. C. Lu, T.-L. Wu

Effectiveness of Decoupling Capacitors Including Mutual Coupling 32

I. Erdin, R. Achar

Advanced Interconnect Technologies

Efficiency Comparison of Directional Optical Couplers in Thin Glass Sheets Manufactured by a Field-Assisted Diffusion Process 35

D. Uebach, T. Kühler, E. Griese

Modeling the Burial Depth of Integrated Single-Mode I/O Structures of MMI-Based Splitters in Thin Glass Sheets 39

J.P. Roth, T. Kühler, E. Griese

Temperature-Aware Compact Modeling of Ultra-Scaled Cu-Graphene Hybrid Interconnects 43

R. Kumar, S. Kumar, S. Guglani, S. Roy, B. K. Kaushik, R. Achar, R. Sharma

Development of Improved Predictor for Expedited Training of Polynomial Chaos Metamodels of Multi-Walled Carbon Nanotube Interconnects 47

S. Guglani, S. Roy

SPI 2020

24th IEEE Workshop On Signal And Power Integrity

Conference Program (2/2)

Interconnect Modeling and Simulation

Simulation of High Speed Backplane 51

L. Bai

Impact of Ports Reference Choice on S-Parameter Modeling of BGA Package Interconnections 55

M. Occhiali, S. Aurora, F. Grassi

Using Orbital Angular Momentum (OAM) Modes on Multi-Conductor Cables for Crosstalk Mitigation 59

M. Wulff, L. Wang, C. Yang, H. Bruens, C. Schuster

Combined Series and Shunt Characterization for Accurate Resonant Frequency Extraction and Circuit Modelling of Surface-Mount Inductors 63

J. Bacmaga, H. Stimac, A. Baric

Design Support by Machine Learning and Artificial Intelligence

Analysis of Parameter Variability in Integrated Devices by Partial Least Squares Regression 67

M. Larbi, R. Trincherro, F. Canavero, P. Besnier, M. Swaminathan

A Machine Learning-Based Epistemic Modeling Framework for EMC and SI Assessment 71

D. Kann, S. de Ridder, D. Spina, T. Dhaene, F. Grassi, H. Rogier, D. Vande Ginste

Comparison of Collaborative versus Extended Artificial Neural Networks for PDN Design 75

M. Schierholz, C. Yang, K. Roy, M. Swaminathan, C. Schuster

Optimizing DDR5 address signal integrity using stochastic learning algorithms 79

N. Bhagwath, D. DeAraujo, J. Balachandran, C. BaekKyu