



# Jitter, Noise, and Signal Integrity at High-Speed

*Mike Peng Li*

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**State-of-the-art JNB and SI Problem-Solving: Theory, Analysis, Methods, and Applications**

Jitter, noise, and bit error (JNB) and signal integrity (SI) have become today's greatest challenges in high-speed digital design. Now, there's a comprehensive and up-to-date guide to overcoming these challenges, direct from **Dr. Mike Peng Li**, cochair of the PCI Express jitter standard committee.

One of the field's most respected experts, Li has brought together the latest theory, analysis, methods, and practical applications, demonstrating how to solve difficult JNB and SI problems in both link components and complete systems. Li introduces the fundamental terminology, definitions, and concepts associated with JNB and SI, as well as their sources and root causes. He guides readers from basic math, statistics, circuit and system models all the way through final applications. Emphasizing clock and serial data communications applications, he covers JNB and SI simulation, modeling, diagnostics, debugging, compliance testing, and much more.

Coverage includes?

- JNB component classification, interrelationships, measurement references, and transfer functions
- Statistical techniques and signal processing theory for quantitatively understanding and modeling JNB and related components
- Jitter, noise, and BER: physical/mathematical foundations and statistical signal processing views
- Jitter separation methods in statistical distribution, time, and frequency domains
- Clock jitter in detail: phase, period, and cycle-to-cycle jitter, and key interrelationships among them
- PLL jitter in clock generation and clock recovery
- Jitter, noise, and SI mechanisms in high-speed link systems
- Quantitative modeling and analysis for jitter, noise, and SI
- Testing requirements and methods for links and systems
- Emerging trends in high-speed JNB and SI

As data rates continue to accelerate, engineers encounter increasingly complex JNB and SI problems. In *Jitter, Noise, and Signal Integrity at High-Speed*, Dr. Li provides powerful new tools for solving these problems—quickly, efficiently, and reliably.

Preface xv

Acknowledgements xxi

About the Author xxiii

Chapter 1: Introduction 1

Chapter 2: Statistical Signal and Linear Theory for Jitter, Noise, and Signal Integrity 27

Chapter 3: Source, Mechanism, and Math Model for Jitter and Noise 75

Chapter 4: Jitter, Noise, BER (JNB), and Interrelationships 109

Chapter 5: Jitter and Noise Separation and Analysis in Statistical Domain 131

Chapter 6: Jitter and Noise Separation and Analysis in the Time and Frequency Domains 163

Chapter 7: Clock Jitter 185

Chapter 8: PLL Jitter and Transfer Function Analysis 209

Chapter 9: Jitter and Signal Integrity Mechanisms for High-Speed Links 253

Chapter 10: Modeling and Analysis for Jitter and Signaling Integrity for High-Speed Links 281

Chapter 11: Testing and Analysis for Jitter and Signaling Integrity for High-Speed Links 309

Chapter 12: Book Summary and Future Challenges 345

Index 353

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