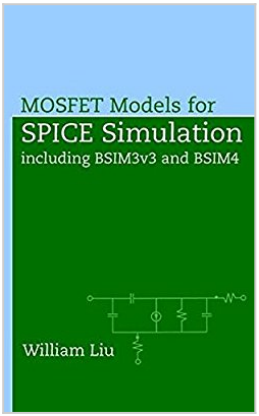

MOSFET Models for SPICE Simulation: Including BSIM3v3 and BSIM4

By William Liu

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An expert guide to understanding and making optimum use of BSIM

Used by more chip designers worldwide than any other comparable model, the Berkeley Short-Channel IGFET Model (BSIM) has, over the past few years, established itself as the de facto standard MOSFET SPICE model for circuit simulation and CMOS technology development. Yet, until now, there have been no independent expert guides or tutorials to supplement the various BSIM manuals currently available. Written by a noted expert in the field, this book fills that gap in the literature by providing a comprehensive guide to understanding and making optimal use of BSIM3 and BSIM4.

Drawing upon his extensive experience designing with BSIM, William Liu provides a brief history of the model, discusses the various advantages of BSIM over other models, and explores the reasons why BSIM3 has been adopted by the majority of circuit manufacturers. He then provides engineers with the detailed practical information and guidance they need to master all of BSIM's features. He:

- Summarizes key BSIM3 components
- Represents the BSIM3 model with equivalent circuits for various operating conditions
- Provides a comprehensive glossary of modeling terminology
- Lists alphabetically BSIM3 parameters along with their meanings and relevant equations
- Explores BSIM3's flaws and provides improvement suggestions
- Describes all of BSIM4's improvements and new features
- Provides useful SPICE files, which are available online at the Wiley ftp site

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Editorial Review

From the Back Cover
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About the Author
WILLIAM LIU, PhD, is a senior member of the technical staff at Texas Instruments, where he has worked since obtaining his PhD in electrical engineering from Stanford University in 1991. Dr. Liu has been TI's lead contact in mentoring the development of BSIM4 model equations with UC Berkeley, and has been in charge of the modeling development for LDMOS/DEMOS and RF-CMOS in TI's SPICE Modeling Laboratory. Dr. Liu has authored/coauthored five book chapters, and has written more than fifty journal papers on modeling, device characterization, and fabrication. Dr. Liu has also published two books on III-V device technologies. Dr. Liu holds sixteen U.S. patents and is a senior member of IEEE.

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