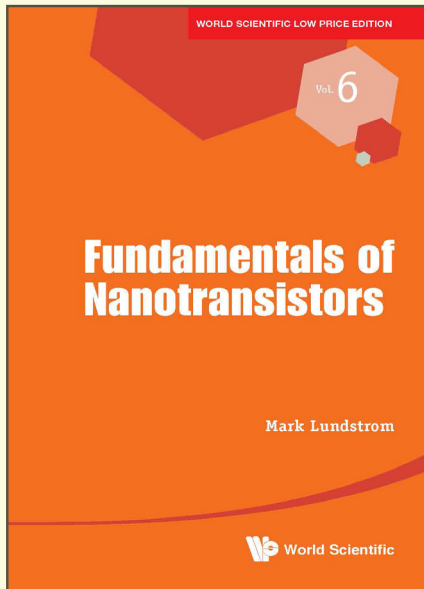


Fundamentals of Nanotransistors



By **Mark Lundstrom**
(Purdue University, USA)

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ABOUT THE BOOK

The transistor is the key enabler of modern electronics. Progress in transistor scaling has pushed channel lengths to the nanometer regime where traditional approaches to device physics are less and less suitable. These lectures describe a way of understanding MOSFETs and other transistors that is much more suitable than traditional approaches when the critical dimensions are measured in nanometers. It uses a novel, “bottom-up approach” that agrees with traditional methods when devices are large, but that also works for nano-devices. Surprisingly, the final result looks much like the traditional, textbook, transistor models, but the parameters in the equations have simple, clear interpretations at the nanoscale. The objective is to provide readers with an understanding of the essential physics of nanoscale transistors as well as some of the practical technological considerations and fundamental limits. This book is written in a way that is broadly accessible to students with only a very basic knowledge of semiconductor physics and electronic circuits.

Complemented with online lecture by Prof Lundstrom: nanoHUB-U Nanoscale Transistor.

READERSHIP

Any student and professional with an undergraduate degree in the physical sciences or engineering.

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