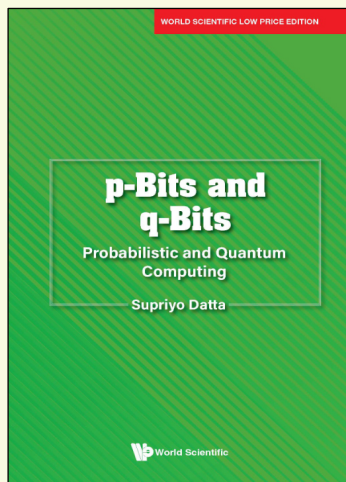


p-Bits and q-Bits

Probabilistic and Quantum Computing

By **Supriyo Datta**
(Purdue University, USA)



ISBN 9798886132021
Extent 304pp
Binding Paperback
Year 2026
Price Rs. 2295

ABOUT THE BOOK

This book is the third volume in the New Era Electronics lecture notes series, a compilation of volumes defining the important concepts tied to the electronics transition happening in the 21st century.

The material is adapted from a unique course that connects three diverse fields — statistical mechanics, neural networks and quantum computing — using the unifying concept of a state-space with 2^N dimensions defined by N binary bits. First, the seminal concepts of statistical mechanics, developed to describe natural interacting systems, are described. Then, these concepts are connected to engineered interacting systems like Boltzmann Machines (BM), which are cleverly designed to solve problems in machine learning. Finally, we connect to engineered quantum systems, stressing the key role of quantum interference in distinguishing them from classical systems like BM.

Assuming only a basic background in differential equations and linear algebra, this book is accessible to broader audiences across its described topics, including students in physics, engineering and computing, as well as professionals working actively in the technical fields looking for a primer to unconventional computing.

READERSHIP

Advanced undergraduate and graduate students, researchers and practitioners in the fields of machine learning, quantum computing and statistical physics.

CONTENTS

- Prologue
- Statistical Mechanics
- Boltzmann Machines
- Transition Matrix

- Quantum Boltzmann Law
- Quantum Transition Matrix

ABOUT THE AUTHOR

Supriyo Datta received his PhD from University of Illinois at Urbana-Champaign in 1979 working on surface acoustic wave devices, and has been with Purdue University since 1981. The non-equilibrium Green function (NEGF) method approach pioneered by his group for the description of quantum transport has been widely adopted in the field of nanoelectronics. He is also known for innovative theoretical proposals that have inspired new fields of research including negative capacitance devices, spintronics and p-bits. He is an elected member of both the US National Academy of Engineering (NAE) and the National Academy of Sciences (NAS).

For orders and enquiries, please contact us:



FEELBOOKS PVT. LTD.

DELHI

4381/4 Ansari Road, Daryaganj, New Delhi 110002

Pushpendra Kumar

Mobile: +91 9015043442

Tel: +91-11-47472630

Email: orders@feelbooks.in

BENGALURU

C-22, Brigade MM, KR Road, Jayanagar 7th Block, Bengaluru 560070

Shekar Reddy

Mobile: +91 9945234476

Tel: +91-80-26762129

Email: bangalore@feelbooks.in

MUMBAI

Vijay Kumar

Mobile: +91 9871176434

Email: vkumar@feelbooks.in

CHENNAI

G Srinivasan

Mobile: +91 9003047502

Email: gsrinivasan@feelbooks.in

KOLKATA

Dhrubajyoti Bhattacharjee

Mobile: +91 9836160013

Email: dbhattacharjee@feelbooks.in

HYDERABAD

K.S.Vishwanath

Mobile: +91 9871745850

Email: kvishwanath@feelbooks.in

For Catalogues & title lists: marketing@feelbooks.in

