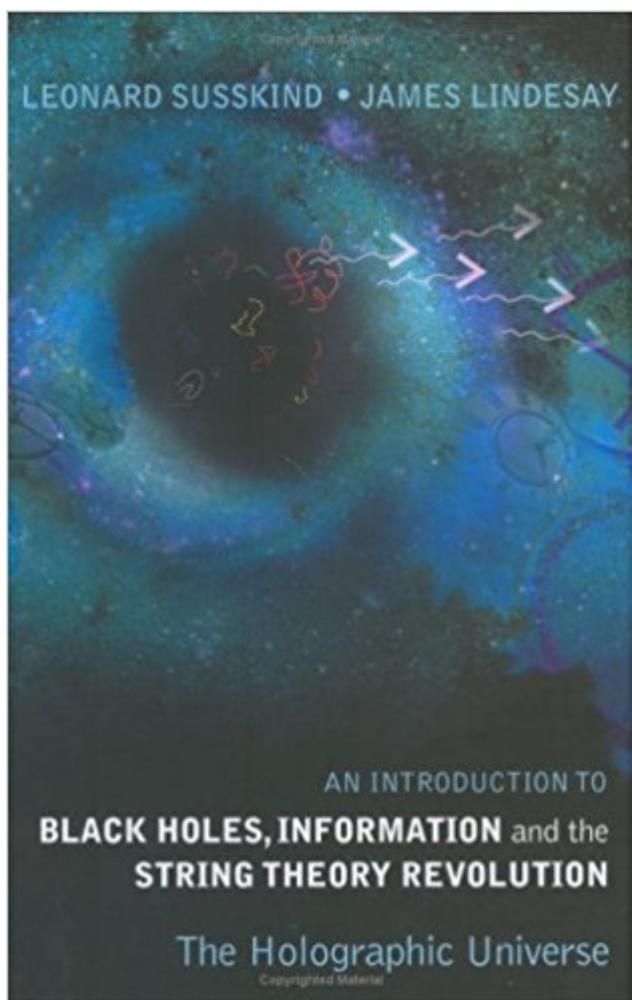


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# An Introduction To Black Holes, Information And The String Theory Revolution: The Holographic Universe



## Synopsis

Over the last decade the physics of black holes has been revolutionized by developments that grew out of Jacob Bekenstein's realization that black holes have entropy. Stephen Hawking raised profound issues concerning the loss of information in black hole evaporation and the consistency of quantum mechanics in a world with gravity. For two decades these questions puzzled theoretical physicists and eventually led to a revolution in the way we think about space, time, matter and information. This revolution has culminated in a remarkable principle called "The Holographic Principle", which is now a major focus of attention in gravitational research, quantum field theory and elementary particle physics. Leonard Susskind, one of the co-inventors of the Holographic Principle as well as one of the founders of String theory, develops and explains these concepts.

## Book Information

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## Customer Reviews

..." This well-planned, stimulating and sometimes provocative book can be enthusiastically recommended. The authors, both established researchers, present a review of black hole physics in one of the simplest and most efficient ways. The book will be useful for students of physics and for everyone interested in understanding ways in which knowledge is generated theoretically. -- Mathematical Reviews "Mathematical Reviews"

Leonard Susskind is Felix Bloch Professor of Theoretical Physics at Stanford University. He is the Recipient of the J J Sakurai Prize, the Pregel Prize, a member of the National Academy of Sciences

and the American Academy of Arts and Sciences. He is also Distinguished Professor of Physics at the Korean Institute for Advanced Study and Extraordinary Professor of Physics at the University of Stellenbosch. James Lindesay is Professor of Physics at Howard University.

This is an excellent book which is not a textbook nor is it a popular book. I would put it at advanced undergraduate/first year graduate level. What is required is a good undergraduate education in physics, basic familiarity with quantum mechanics, relativity (special and general), and being comfortable with statistical mechanics and statistical arguments. An acquaintance with some aspects though certainly not complete mastery of quantum field theory would also be extremely helpful. But this short book really introduces many of the conceptual advances in theoretical physics that have occurred in the last four decades. Of course it will need to be updated soon to capture recent developments especially the "firewall" controversy.

The book is lengthier (sic!) than *A Brief History Of Time*, and expands more on the same concepts and the contradictions. Written with a keen sense of humor, and autobiographical inserts that make the book thoroughly enjoyable.

It was a gift for someone. They really like it, even if they can't understand all of it.

Tough subject matter presented in a digestible format; Leonard Susskind is a Feynman-level explainer.

OK - I bought this book so I could see the real math of black holes. I got tired of reading about the math of black holes, of someone else doing the interpretation and telling me about the math. So, I bought this book. It is pretty much all math. And while I have had Calculus I, II, II, and Differential Equations (25 years ago) the math of black holes requires more than that. More than my linear algebra, too. There are words, to be clear. I understand most of the words. But this is really a textbook for people with deep math backgrounds, not really for a layperson. If you have watched such shows as "The Elegant Universe" or "COSMOS" and ever thought, "I wonder what the math looks like," buy this book and leave it out on your coffee table. Friends will pick it up and be amazed you appear to understand such heady science.

Judging from my initial read, I'm sure that I will spend the next ten years untying the knots in my

strings.

This is a real path-breaking study by one of the founders of String Theory and author of "Black Hole Wars," a more historical narrative detailing the debate with Stephen Hawking about whether information is lost in black holes. This book, in contrast, is less conversational and more like a thin text packed with intellectual diamonds. It is brief and action packed with formulas and simple explanations, a great balance of theory and narrative which very succinctly covers the topics of black holes and how they are described by string theory. Not like the usual book which is fluffy with no mathematical details, or a heavy textbook that is impossible to follow. The math is light but challenging for a non-physicist. Cool book and very informative. Cutting edge. TS

Although this book is very detailed and technical, it is clear, accessible, and engaging as any text-seminar on the mechanics of black holes could ever hope to be. Thanks so much, Lenny Susskind!!!

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