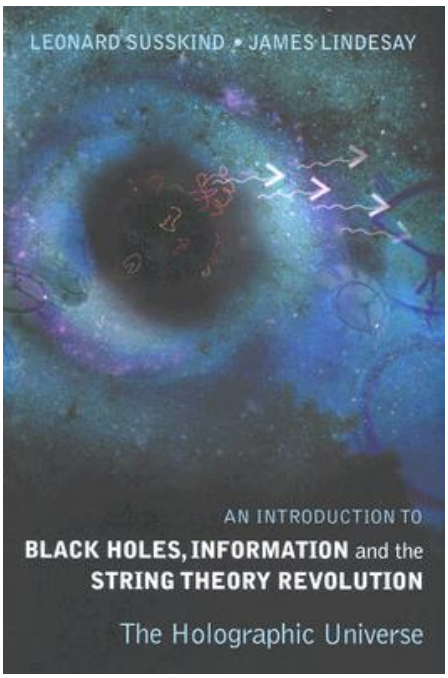

An Introduction to Black Holes, Information and the String Theory Revolution: The Holographic Universe

Leonard Susskind , James Lindesay

An Introduction to Black Holes, Information and the String Theory Revolution: The Holographic Universe

Leonard Susskind , James Lindesay

An Introduction to Black Holes, Information and the String Theory Revolution: The Holographic Universe Leonard Susskind , James Lindesay
- A unique exposition of the foundations of the quantum theory of black holes including the impact of string theory, the idea of black hole complementarily and the holographic principle
bull; Aims to educate the physicist or student of physics who is not an expert on string theory, on the revolution that has grown out of black hole physics and string theory

An Introduction to Black Holes, Information and the String Theory Revolution: The Holographic Universe Details

Date	:	Published December 23rd 2004 by World Scientific Publishing Company (first published December 1st 2004)
ISBN	:	9789812561312
Author	:	Leonard Susskind , James Lindesay
Format	:	Paperback 200 pages
Genre	:	Science, Physics, Nonfiction, Popular Science

From Reader Review An Introduction to Black Holes, Information and the String Theory Revolution: The Holographic Universe for online ebook

Mεδ Rεδ?α says

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.

Contents:
-Black Holes and Quantum Mechanics:The Schwarzschild Black Hole
-Scalar Wave Equation in a Schwarzschild Background
-Quantum Fields in Rindler Space
-Entropy of the Free Quantum Field in Rindler Space
-Thermodynamics of Black Holes
-Charged Black Holes
-The Stretched Horizon
-The Laws of Nature
-The Puzzle of Information Conservation in Black Hole Environments
-Horizons and the UV/IR Connection
-Entropy Bounds and Holography:
-Entropy Bounds
-The Holographic Principle and Anti de Sitter Space
-Black Holes in a Box
-Black Holes and Strings:
-Strings
-Entropy of Strings and Black Holes

Readership: Graduate students, researchers and theoretical physicists.

Valeh Farzaliyev says

Leonard Susskind is definitely the best alive physicist. I've recently learned about him that he was the man who treated Veneziano's dual model as quantum mechanical oscillating string.

This book is very hard to comprehend. All the topics are so abstract that you can merely imagine what is going on. Starting with simple Schwarzchild metric and doing manipulations in a way that you get

conformally flat Minkowski space-time and then transform it to Rindler space is like whatever. Penrose diagrams are fatality.

On the other hands, authors get through different topics cohesively. I have no degree in physics, but I was able to follow majority of logic flow. The main aim of this book is explore black holes and show that they can be represented as a very very big 1 dimensional string

Black holes are extremely rare objects to observe in reality. However, they are just solutions to Einstein equations and physicist love to do so (solve those non-linear differential equations in arbitrary space-times in D dimension - whatever 2). If there exists a black hole then you can do some theoretical experiments. You can either stand far away from horizon or fall into a black hole.
That is the main observation in the book that discussions go around. Some fundamental laws should have to be modified that our current understanding of black holes be more realistic (and reasonable).

This book discusses 4 different views: Black Hole Complimentary, UV/IR connection, Holographic principle and String view of Black Holes. There are some mathematical formulas around to prove assumptions. At the end, you see that there exists a pattern: You have to find a connection between Bekenstein-Hawking entropy formula and statistical microscopic states or thermodynamic entropy.
Authors claim that calculations on all types of black holes that were studied precisely agree with Bekenstein-Hawking entropy formula.

Ant says

Without a background in maths, I found it quite tough going. Super interesting though.
