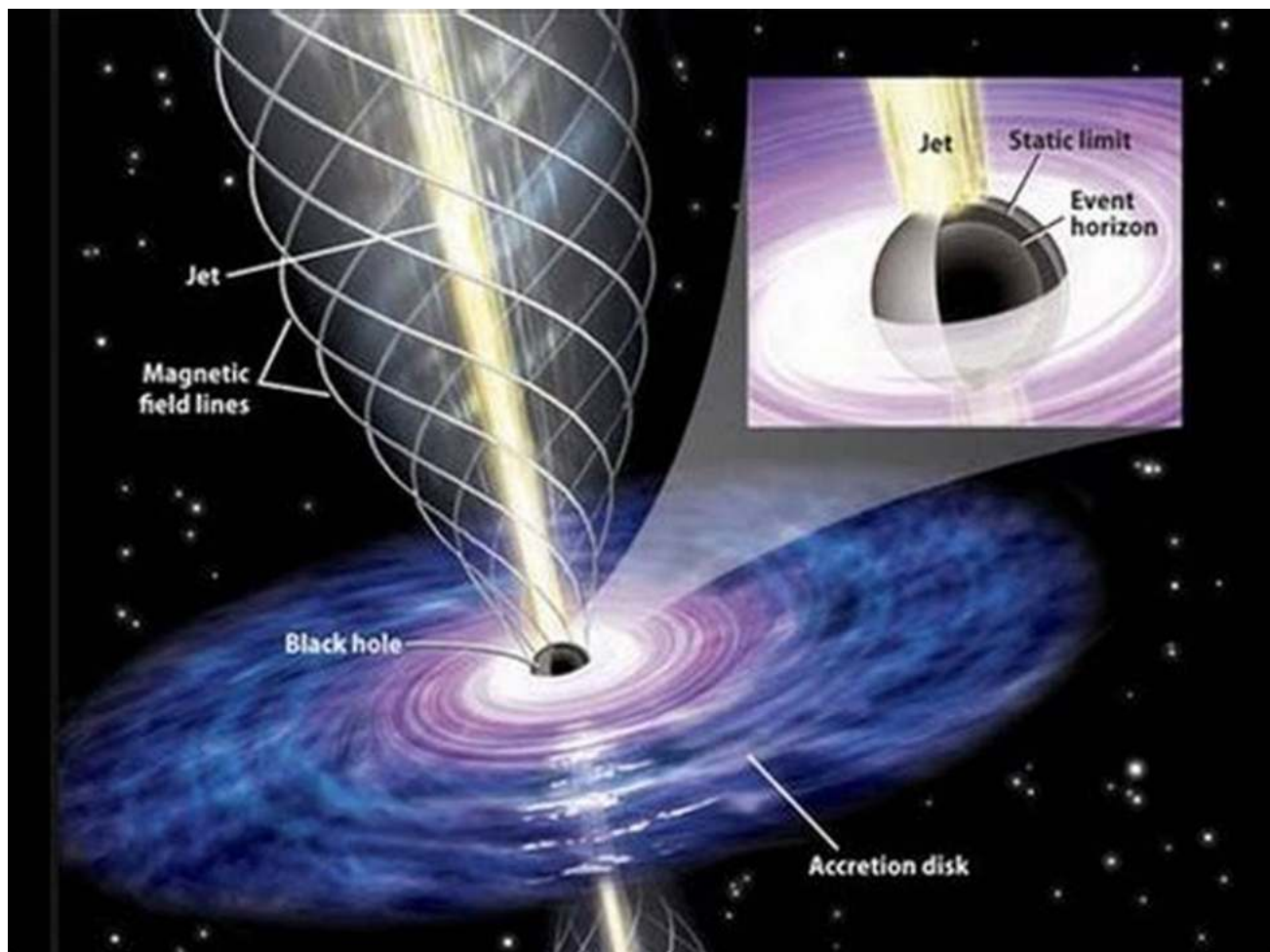


Discover the Fascinating World of Holographic Entanglement Entropy!

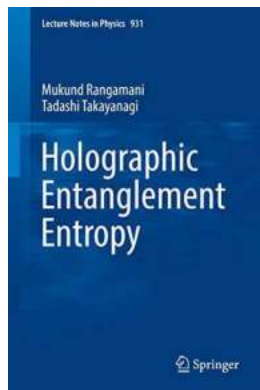


Welcome to the captivating realm of holographic entanglement entropy! Have you ever pondered upon the profound mysteries of quantum physics and its interconnectedness with our physical reality? If so, you're in for a treat as we delve into the mesmerizing subject of holographic entanglement entropy.

What is Holographic Entanglement Entropy?

Holographic entanglement entropy is a groundbreaking concept that emerged from the brilliant minds working at the intersection of quantum physics and

information theory. It revolves around the idea of quantifying the entanglement between subregions of a quantum system using principles borrowed from holography.



Holographic Entanglement Entropy (Lecture Notes in Physics Book 931)

by Steven H. Strogatz (1st ed. 2017 Edition, Kindle Edition)

★★★★☆ 4.5 out of 5

Language : English

File size : 8075 KB

Text-to-Speech : Enabled

Screen Reader : Supported

Enhanced typesetting : Enabled

Print length : 258 pages

X-Ray for textbooks : Enabled



Understanding Entanglement Entropy

Entanglement entropy, at its core, describes the degree of entanglement between two or more quantum systems. It measures the amount of information shared between these systems and provides insights into the complexity and interdependence of their quantum states.

The Role of Holography

Holography, most commonly associated with three-dimensional projections and vivid imagery, finds its application in the study of entanglement entropy through the AdS/CFT correspondence. The Anti-de Sitter/Conformal Field Theory (AdS/CFT) duality allows us to map quantum field theories to classical gravitational systems, providing a holographic description of entanglement entropy.

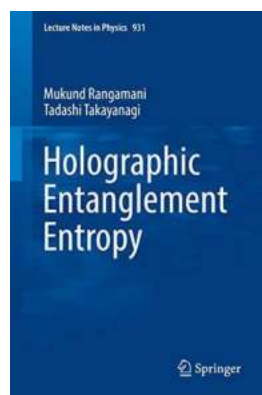
Holographic Entanglement Entropy and Black Holes

One fascinating aspect of holographic entanglement entropy lies in its relationship with black holes. According to the influential Holographic Principle, the information within a black hole can be encoded on its event horizon. This connection between black holes and information theory has revolutionized our understanding of quantum gravity.

Applications and Implications

The study of holographic entanglement entropy holds immense potential in various fields. It has found practical applications in quantum computing, quantum information theory, and condensed matter physics. Additionally, it offers new perspectives on the fundamental nature of space, time, and the fabric of our universe.

The multidimensional world of holographic entanglement entropy widens our horizons, providing deeper insights into the profound mysteries of quantum physics. By leveraging holography and understanding the intricate nature of entanglement entropy, we gain a better understanding of the interconnectedness and complexities that govern our existence.



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This book provides a comprehensive overview of developments in the field of holographic entanglement entropy. Within the context of the AdS/CFT correspondence, it is shown how quantum entanglement is computed by the area of certain extremal surfaces. The general lessons one can learn from this connection are drawn out for quantum field theories, many-body physics, and quantum gravity. An overview of the necessary background material is provided together with a flavor of the exciting open questions that are currently being discussed.

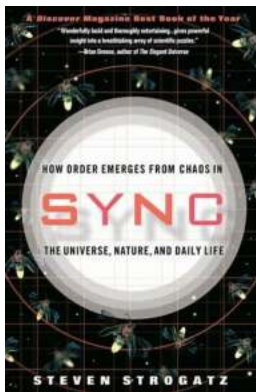
The book is divided into four main parts. In the first part, the concept of entanglement, and methods for computing it, in quantum field theories is reviewed. In the second part, an overview of the AdS/CFT correspondence is given and the holographic entanglement entropy prescription is explained. In the third part, the time-dependence of entanglement entropy in out-of-equilibrium systems, and applications to many body physics are explored using holographic methods. The last part focuses on the connection between entanglement and geometry. Known constraints on the holographic map, as well as, elaboration of entanglement being a fundamental building block of geometry are explained.

The book is a useful resource for researchers and graduate students interested in string theory and holography, condensed matter and quantum information, as it tries to connect these different subjects linked by the common theme of quantum entanglement.



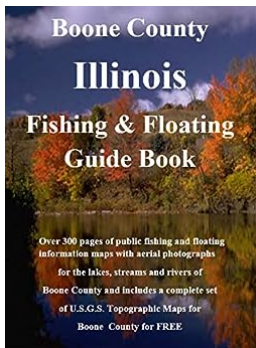
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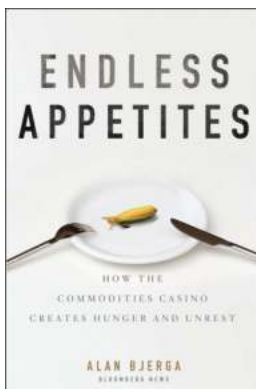
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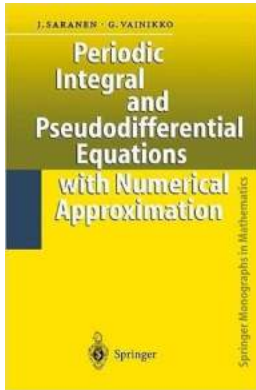
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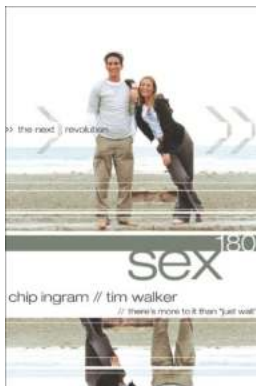
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