

# Unveiling the Intricacies of Supersymmetry: De Gruyter Studies In Mathematical Physics 49

Supersymmetry, an essential concept in theoretical physics, has been a captivating and puzzling subject for physicists and mathematicians alike. It provides a framework that unifies particles and forces, going beyond the limitations of the Standard Model. One of the groundbreaking references dedicated to exploring this field is the book "Supersymmetry" from the De Gruyter Studies In Mathematical Physics 49 series.

## What is Supersymmetry?

Supersymmetry, often shortened as SUSY, is a theoretical symmetry that introduces a connection between two different types of particles: bosons and fermions. It proposes that for each particle in the Standard Model of particle physics, there is a supersymmetric partner particle with slightly different properties.

These supersymmetric partnerships are formed through the transformation between particles with integer spin (bosons) and particles with half-integer spin (fermions). This symmetry has the potential to address some of the fundamental problems in physics, such as the hierarchy problem and the nature of dark matter.

## Supersymmetry (De Gruyter Studies in Mathematical Physics Book 49)

by Henrik Rehr (Kindle Edition)

★★★★☆ 4.4 out of 5

Language : English

File size : 26820 KB



Text-to-Speech : Enabled  
Enhanced typesetting : Enabled  
Print length : 229 pages  
Screen Reader : Supported



## The Significance of De Gruyter Studies In Mathematical Physics 49

The De Gruyter Studies In Mathematical Physics series provides a comprehensive platform for researchers, practitioners, and students to delve into the intricacies of various mathematical and physical theories. The book "Supersymmetry" in this series, written by leading experts in the field, offers a remarkable exploration of the subject.

The volume 49, dedicated to supersymmetry, delves into the mathematical aspects of this theory, providing insights into the algebraic structures, Lie superalgebras, and superfields. It goes beyond the superficial understanding of supersymmetry and allows readers to grasp the underlying mathematical connections that make this theory so unique.

### Key Topics Covered in "Supersymmetry"

The book comprehensively covers a range of topics related to supersymmetry, including:

- to the concept of supersymmetry and its motivations in theoretical physics
- Overview of the mathematical foundations and Lie superalgebras

- Formulation of superfields and their role in constructing supersymmetric theories
- Supersymmetric quantum mechanics
- Exploration of supersymmetric field theories and their applications in particle physics
- Supergravity and its interplay with supersymmetry

Each topic is presented in a detailed and accessible manner, encouraging both newcomers and experts to deepen their understanding of the subject.

## **Why You Should Read "Supersymmetry" from De Gruyter Studies In Mathematical Physics 49**

Whether you are a student, researcher, or a physics enthusiast, "Supersymmetry" from the De Gruyter Studies In Mathematical Physics 49 series offers a rich source of knowledge and inspiration. Here are some reasons why this book deserves a spot on your reading list:

1. **Comprehensive Coverage:** The book covers various aspects of supersymmetry, from its theoretical foundations to its applications in quantum mechanics and particle physics.
2. **Expert Authorship:** The book is authored by renowned experts in the field, ensuring the accuracy and reliability of the content.
3. **Mathematical Rigor:** "Supersymmetry" provides a mathematical approach to understanding the theory, enabling readers to explore its profound connections and implications.
4. **Engaging Presentation:** The authors present the material in a clear and concise manner, making complex concepts accessible to readers of different

backgrounds.

5. **Insights into Cutting-Edge Research:** By studying this book, readers can stay updated on the latest developments and advancements in the field of supersymmetry.

Supersymmetry continues to captivate researchers and physicists with its potential to revolutionize our understanding of the universe. The book "Supersymmetry" from the De Gruyter Studies In Mathematical Physics 49 series offers an excellent opportunity to explore this fascinating field from a mathematical perspective. Whether you are a beginner or an expert, this book provides a comprehensive and engaging insight into supersymmetry, making it an invaluable resource for anyone interested in this groundbreaking concept.



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With applications in quantum field theory, general relativity and elementary particle physics, this four-volume work studies the invariance of differential operators under Lie algebras, quantum groups and superalgebras. This third volume covers supersymmetry, including detailed coverage of conformal

supersymmetry in four and some higher dimensions, furthermore quantum superalgebras are also considered.

Contents

Lie superalgebras

Conformal supersymmetry in 4D

Examples of conformal supersymmetry for  $D > 4$

Quantum superalgebras



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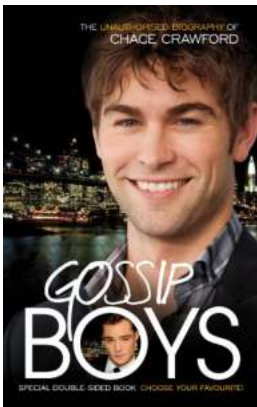
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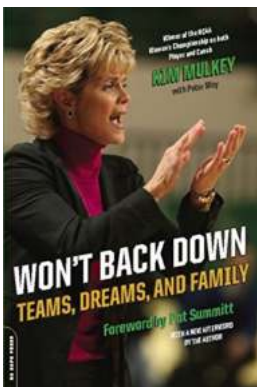
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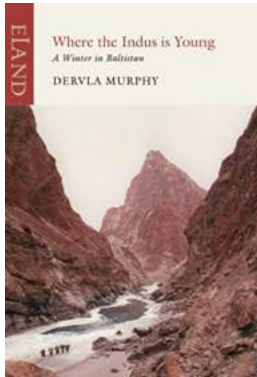
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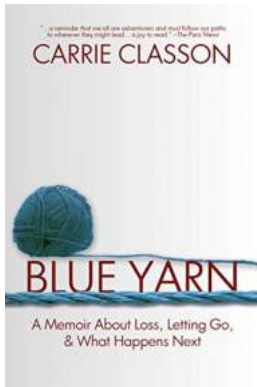
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