

Divergent Summability and Resurgence II: Unveiling the Secrets of Asymptotic Series

In the realm of mathematics, asymptotic series play a crucial role in approximating functions and understanding their behavior at extreme values. However, these series often exhibit unusual behaviors, such as convergence or divergence depending on the choice of summation method. This fascinating phenomenon has attracted the attention of mathematicians for centuries and has led to the development of divergent summability and resurgence theory.



Divergent Series, Summability and Resurgence II: Simple and Multiple Summability (Lecture Notes in Mathematics Book 2154) by Michèle Loday-Richaud

★★★★★ 5 out of 5

Language : English

File size : 6161 KB

Screen Reader : Supported

Print length : 272 pages

X-Ray for textbooks : Enabled



Divergent Summability: Bridging the Gap between Divergence and Convergence

Divergent summability is a powerful technique that allows mathematicians to assign a meaningful value to divergent series. By introducing a specific summation method, such as the Borel or Euler-Maclaurin summation, it becomes possible to extract finite results from seemingly divergent series.

This remarkable ability has opened up new avenues for exploring the behavior of asymptotic series.

Resurgence: Uncovering Hidden Singularities

Resurgence theory takes divergent summability a step further by revealing the hidden singularities that lie beneath divergent asymptotic series. These singularities, which are invisible using traditional analytical methods, play a profound role in shaping the behavior of the series. Resurgence theory provides a framework for understanding and characterizing these singularities, enabling mathematicians to gain deeper insights into the nature of asymptotic expansions.

Applications in Diverse Fields

Divergent summability and resurgence have found applications in a wide range of fields, including:

- **Mathematics:** Understanding the convergence and divergence of asymptotic series in number theory, algebraic geometry, and analysis.
- **Physics:** Describing the behavior of quantum field theories, statistical mechanics, and condensed matter physics.
- **Computer science:** Developing efficient numerical methods for solving differential equations and other complex problems.

Key Features of the Book

- Comprehensive coverage of divergent summability and resurgence theory, providing a thorough foundation for both beginners and advanced researchers.

- In-depth analysis of various summation methods, including Borel, Euler-Maclaurin, and Levin.
- Exploration of resurgence theory and its applications to quantum field theories and other physical systems.
- Case studies and examples that illustrate the practical applications of divergent summability and resurgence.
- Thought-provoking discussions and open problems that inspire further research and exploration.

Target Audience

This book is intended for:

- Mathematicians and physicists interested in asymptotic analysis, divergent series, and resurgence.
- Graduate students and researchers seeking a comprehensive understanding of these advanced topics.
- Anyone fascinated by the intricate connections between mathematics and physics.

Divergent Summability and Resurgence II is an invaluable resource for anyone interested in the convergence and divergence of asymptotic series. Its detailed analysis, cutting-edge research, and practical applications make it an essential addition to the libraries of mathematicians, physicists, and anyone seeking to unravel the mysteries of asymptotic expansions.

Free Download your copy today!



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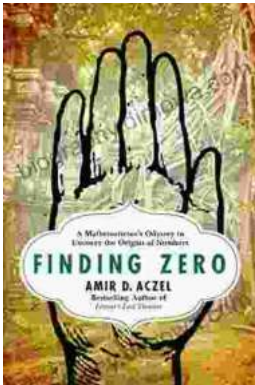
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