

The Topos Of Music Geometric Logic Of Concepts Theory And Performance 1st Edition

The Topos of Music
 Geometric Logic of Concepts, Theory, and Performance
 Towards a Computational Musical Theory of Everything
 Higher Categories and Homotopical Algebra
 From Music to Mathematics
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 The Topos of Music
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The Topos of Music Princeton University Press

This book represents a new approach to musical creativity, dealing with the semiotics, mathematical principles, and software for creativity processes. After a thorough introduction, the book offers a first practical part with a detailed tutorial for students in composition and improvisation, using musical instruments and music software. The second, theoretical part deals with historical, actual, and new principles of creative processes in music, based on the results and methods developed in the first author's book *Topos of Music* and referring to semiotics, predicative objects, topos theory, and object-oriented concept architectures. The third part of the book details four case studies in musical creativity, including an analysis of the six variations of Beethoven's sonata op. 109, a discussion of the creative process in a CD coproduced in 2011 by the first and

second authors, a recomposition of Boulez's "Structures pour deux pianos" using the Rubato software module BigBang developed by the third author, and the Escher theorem from mathematical gesture theory in music. This is both a textbook addressed to undergraduate and graduate students of music composition and improvisation, and also a state-of-the-art survey addressed to researchers in creativity studies and music technology. The book contains summaries and end-of-chapter questions, and the authors have used the book as the main reference to teach an undergraduate creativity studies program and also to teach composition. The text is supported throughout with musical score examples.

[Geometric Logic of Concepts, Theory, and Performance](#) Springer

This second volume of a comprehensive tour through mathematical core subjects for computer scientists completes the first volume in two regards: Part III first adds topology, differential, and integral calculus to the topics of sets, graphs, algebra, formal logic, machines, and linear geometry, of volume 1. With this spectrum of fundamentals in mathematical education, young professionals should be able to successfully attack more involved subjects, which may be relevant to the

computational sciences. In a second regard, the end of part III and part IV add a selection of more advanced topics. In view of the overwhelming variety of mathematical approaches in the computational sciences, any selection, even the most empirical, requires a methodological justification. Our primary criterion has been the search for harmonization and optimization of thematic diversity and logical coherence. This is why we have, for instance, bundled such seemingly distant subjects as recursive constructions, ordinary differential equations, and fractals under the unifying perspective of c-traction theory.

[Towards a Computational Musical Theory of Everything](#) Oxford University Press

The idea of this monograph is to present an overview of decisive theoretical, computational, technological, aesthetical, artistic, economical, and sociological directions to create future music. It features a unique insight into dominant scientific and artistic new directions, which are guaranteed by the authors' prominent publications in books, software, musical, and dance productions. Applying recent research results from mathematical and computational music theory and software as well as new ideas of embodiment approaches and non-Western music cultures, this book

presents new composition methods and technologies. Mathematical, computational, and semiotic models of artistic presence (imaginary time, gestural creativity) as well as strategies are also covered. This book will be of interest to composers, music technicians, and organizers in the internet-based music industry, who are offered concrete conceptual architectures and tools for their future strategies in musical creativity and production.

Higher Categories and Homotopical Algebra Springer

This is the first volume of the second edition of the now classic book “The Topos of Music”. The author explains the theory’s conceptual framework of denotators and forms, the classification of local and global musical objects, the mathematical models of harmony and counterpoint, and topologies for rhythm and motives.

From Music to Mathematics Getty Publications

This book presents a deep spectrum of musical, mathematical, physical, and philosophical perspectives that have emerged in this field at the intersection of music and mathematics. In particular the contributed chapters introduce advanced techniques and concepts from modern mathematics and physics, deriving from successes in domains such as Topos theory and physical string theory. The authors include many of the leading researchers in this domain, and the book will be of value to researchers working in computational music, particularly in the areas of counterpoint, gesture, and Topos theory.

The Topos of Music III: Gestures OUP USA

After the development of manifolds and algebraic varieties in the previous century, mathematicians and physicists have continued to advance concepts of space. This book and its companion explore various new notions of space, including both formal and conceptual points of view, as presented by leading experts at the New Spaces in Mathematics and Physics workshop held at the Institut Henri Poincaré in 2015. This volume covers a broad range of topics in mathematical physics, including noncommutative geometry, supergeometry, derived symplectic geometry, higher geometric quantization, intuitionistic quantum logic, problems with the continuum description of spacetime, twistor theory, loop quantum gravity, and geometry in string theory. It is addressed primarily to mathematical physicists and mathematicians, but also to historians and philosophers of these disciplines.

The Topos of Music Cambridge University Press

Publisher Description

Music Through Fourier Space Springer Science & Business Media

Algebraic geometry is a fascinating branch of mathematics that combines methods from both, algebra and geometry. It transcends the limited scope of pure algebra by means of geometric construction principles. Moreover, Grothendieck’s schemes invented in the late 1950s allowed the application of algebraic-geometric methods in fields that formerly seemed to be far away from geometry, like algebraic number theory. The new techniques paved the way to spectacular progress such as the proof of Fermat’s Last Theorem by Wiles and Taylor. The scheme-theoretic approach to algebraic geometry is explained for non-experts. More advanced readers can use the book to broaden their view on the subject. A separate part deals with the necessary prerequisites from commutative algebra. On a whole, the book provides a very accessible and self-contained introduction to algebraic geometry, up to a quite advanced level. Every chapter of the book is preceded by a motivating introduction with an informal discussion of the contents. Typical examples and an abundance of exercises illustrate each section. This way the book is an excellent

solution for learning by yourself or for complementing knowledge that is already present. It can equally be used as a convenient source for courses and seminars or as supplemental literature.

Topos Theory Springer

With contributions by numerous experts

Mathematics and Computation in Music Cambridge University Press

Annotation. The book is intended as a text for a two-semester course in topology and algebraic topology at the advanced undergraduate or beginning graduate level. There are over 500 exercises, 114 figures, numerous diagrams. The general direction of the book is toward homotopy theory with a geometric point of view. This book would provide a more than adequate background for a standard algebraic topology course that begins with homology theory. For more information see www.bangor.ac.uk/r.brown/topgpds.html This version dated April 19, 2006, has a number of corrections made.

Higher Operads, Higher Categories Cambridge University Press

This book constitutes the thoroughly refereed proceedings of the Fourth International Conference on Mathematics and Computation in Music, MCM 2013, held in Montreal, Canada, in June 2013. The 18 papers presented were carefully reviewed and selected from numerous submissions. They are promoting the collaboration and exchange of ideas among researchers in music theory, mathematics, computer science, musicology, cognition and other related fields.

7th International Conference, MCM 2019, Madrid, Spain, June 18–21, 2019, Proceedings Springer

At last, a friendly introduction to modern homotopy theory after Joyal and Lurie, reaching advanced tools and starting from scratch.

Mathematics and Computation in Music Booksurge LLC

Since precious few architectural drawings and no theoretical treatises on architecture remain from the premodern Islamic world, the Timurid pattern scroll in the collection of the Topkapi Palace Museum Library is an exceedingly rich and valuable source of information. In the course of her in-depth analysis of this scroll dating from the late fifteenth or early sixteenth century, Gülrü Necipoğlu throws new light on the conceptualization, recording, and transmission of architectural design in the Islamic world between the tenth and sixteenth centuries. Her text has particularly far-reaching implications for recent discussions on vision, subjectivity, and the semiotics of abstract representation. She also compares the Islamic understanding of geometry with that found in medieval Western art, making this book particularly valuable for all historians and critics of architecture. The scroll, with its 114 individual geometric patterns for wall surfaces and vaulting, is reproduced entirely in color in this elegant, large-format volume. An extensive catalogue includes illustrations showing the underlying geometries (in the form of incised “dead” drawings) from which the individual patterns are generated. An essay by Mohammad al-Asad discusses the geometry of the muqarnas and demonstrates by means of CAD drawings how one of the scroll’s patterns could be used to design a three-dimensional vault.

Handbook of Categorical Algebra: Volume 3, Sheaf Theory Springer

This book constitutes the thoroughly refereed proceedings of the 6th International Conference on Mathematics and Computation in Music, MCM 2017, held in Mexico City, Mexico, in June 2017. The 26 full papers and 2 short papers presented were carefully reviewed and selected from 40 submissions. The papers feature research that combines mathematics or computation with music theory, music analysis, composition, and performance. They are organized in topical sections on algebraic models, computer assisted performance, Fourier analysis, Gesture Theory, Graph Theory and Combinatorics, Machine Learning, and Probability and Statistics in Musical Analysis and

Composition.

Mathematics and Computation in Music Courier Corporation

Algebra and Tiling is a book about how to cover surfaces with shapes.

Algebra and Tiling Birkhäuser

From the first chapter through the last, readers eager to learn more about the connections between mathematics and music will find a comprehensive textbook designed to satisfy their natural curiosity.

Algebraic, Geometric, Combinatorial, Topological and Applied Approaches to Understanding Musical Phenomena Oxford University Press

This is a collection of surveys on important mathematical ideas, their origin, their evolution and their impact in current research. The authors are mathematicians who are leading experts in their fields. The book is addressed to all mathematicians, from undergraduate students to senior researchers, regardless of the specialty.

Calculus and ODEs, Splines, Probability, Fourier and Wavelet Theory, Fractals and Neural Networks, Categories and Lambda Calculus Cambridge University Press

This textbook is a first introduction to mathematics for music theorists, covering basic topics such as sets and functions, universal properties, numbers and recursion, graphs, groups, rings, matrices and modules, continuity, calculus, and gestures. It approaches these abstract themes in a new way: Every concept or theorem is motivated and illustrated by examples from music theory (such as harmony, counterpoint, tuning), composition (e.g., classical combinatorics, dodecaphonic composition), and gestural performance. The book includes many illustrations, and exercises with solutions.

Comprehensive Mathematics for Computer Scientists 2 Springer

This four-volume set is the second edition of the now classic book “The Topos of Music”. In Vol. I the author explains the theory’s conceptual framework of denotators and forms, the classification of local and global musical objects, the mathematical models of harmony and counterpoint, and topologies for rhythm and motives. In Vol. II the author explains his theory of musical performance, developed in the language of differential geometry, introducing performance vector fields that generalize tempo and intonation. Volume III presents gesture theory, including a gesture philosophy for music, the mathematics of gestures, concept architectures and software for musical gesture theory, the multiverse perspective which reveals the relationship between gesture theory and the string theory in theoretical physics, and applications of gesture theory to a number of musical themes, including counterpoint, modulation theory, free jazz, Hindustani music, and vocal gestures. Finally, Vol. IV contains appendices, explaining background topics in sound, mathematics, and music.

Four Analytic Essays Springer

This book constitutes the refereed proceedings of the Second International Conference on Mathematics and Computation in Music, MCM 2009, held in New Haven, CT, USA, in June 2009. The 26 revised full papers presented were carefully reviewed and selected from 38 submissions. The MCM conference is the flagship conference of the Society for Mathematics and Computation in Music. The papers deal with topics within applied mathematics, computational models, mathematical modelling and various further aspects of the theory of music. This year’s conference is dedicated to the honor of John Clough whose research modeled the virtues of collaborative work across the disciplines.

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