



The Math Behind the Music (Outlooks)

By Leon Harkleroad

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Mathematics has been used for centuries to describe, analyze, and create music. In this book, Leon Harkleroad explores the math related aspects of music from its acoustical bases to compositional techniques to music criticism, touching on - overtones, scales, and tuning systems - the musical dice game attributed to Mozart and Haydn - the several-hundred-year-old style of bell-playing known as ringing the changes - the twelve-tone school of composition that strongly influenced music throughout the 20th century and many other topics involving mathematical ideas from probability theory to Fourier series to group theory. He also relates some cautionary tales of misguided attempts to mix music and mathematics. Both the mathematical and the musical concepts are described in an elementary way, making the book accessible to general readers as well as to mathematicians and musicians of all levels. The book is accompanied by an audio CD of musical examples.

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Editorial Review

Review

"...a text which relates music and mathematics in a manner accessible to many individuals, and provides a bibliography of further readings on each chapter's topics, so the best use of this book may be as a jumping-off point for further examinations of whichever topic interests and individual reader. The Math Behind the Music does not require advanced understanding of either mathematics or music: in fact most of the text could be easily understood by an interested high school student."

Sarah Boslaugh

MAA Reviews

"Leon Harkleroad has written a concise and accessible survey of some of the interesting mathematics of music, and he has done so in a way that requires a minimum of preparation on the reader's part in either music or mathematics."

Gareth Loy, Gareth, Inc.

"The book can be recommended as a first survey. Those who want to know more can find many suggestions for further study in the extensive bibliography. The book addresses readers who do not have much mathematical knowledge. Everything is explained clearly and at great length, and the theoretical facts are illustrated by many pictures, scores, and the tracks on the accompanying CD."

The Mathematical Intelligencer

"The material is very well presented and well explained, it comes with many (musical and mathematical) examples and illustrations (the book even comes with a CD-ROM from which the reader can listen to the musical examples of the book), and many details side aspects, anecdotes and references are provided."

Christian Krattenhaler, Mathematical Reviews

Users Review

From reader reviews:

Marcus Leiva:

This The Math Behind the Music (Outlooks) book is absolutely not ordinary book, you have after that it the world is in your hands. The benefit you get by reading this book is actually information inside this guide incredible fresh, you will get information which is getting deeper anyone read a lot of information you will get. That The Math Behind the Music (Outlooks) without we know teach the one who looking at it become critical in contemplating and analyzing. Don't always be worry The Math Behind the Music (Outlooks) can bring when you are and not make your carrier space or bookshelves' turn into full because you can have it in the lovely laptop even telephone. This The Math Behind the Music (Outlooks) having great arrangement in word along with layout, so you will not really feel uninterested in reading.

Gregory Holloman:

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