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   Titolo   Mathematical and Computational Modeling of Tonality : Theory and Applications / / by Elaine Chew

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   Edizione   [1st ed. 2014.]

   Descrizione fisica   1 online resource (305 p.)

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   Disciplina   781.258

   Soggetti   Operations research
                            Decision making
                            Computer science - Mathematics
                            Music
                            Cognitive psychology
                            Operations Research/Decision Theory
                            Computational Mathematics and Numerical Analysis
                            Cognitive Psychology

   Lingua di pubblicazione Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Note generali   Description based upon print version of record.

   Nota di bibliografia   Includes bibliographical references at the end of each chapters and indexes.

   Nota di contenuto   Tonality -- An Abbreviated Survey -- The Spiral Array -- The CEG Algorithm (Part I) -- The CEG Algorithm (Part II): Validation -- Determining Key Boundaries -- Argus Segmentation Method -- Real-Time Pitch Spelling -- MuSA.RT -- Visible Humor -- Sensitivity Analysis -- Model Calibration -- CEG Key Finding: Bach's WTC book I.

   Sommario/riassunto   From the Preface: Blending ideas from operations research, music psychology, music theory, and cognitive science, this book aims to tell a coherent story of how tonality pervades our experience, and hence our models, of music. The story is told through the developmental stages of the Spiral Array model for tonality, a geometric model designed to incorporate and represent principles of tonal cognition, thereby lending itself to practical applications of tonal recognition, segmentation, and visualization. Mathematically speaking, the coils that make up the Spiral Array model are in effect helices, a spiral

referring to a curve emanating from a central point. The use of "spiral" here is inspired by spiral staircases, intertwined spiral staircases: nested double helices within an outer spiral. The book serves as a compilation of knowledge about the Spiral Array model and its applications, and is written for a broad audience, ranging from the layperson interested in music, mathematics, and computing to the music scientist-engineer interested in computational approaches to music representation and analysis, from the music-mathematical and computational sciences student interested in learning about tonality from a formal modeling standpoint to the computer musician interested in applying these technologies in interactive composition and performance. Some chapters assume no musical or technical knowledge, and some are more musically or computationally involved.