1. Record Nr. UNINA9910554229403321

Autore	Soldier Dave <1956->
Titolo	Music, math, and mind : the physics and neuroscience of music / / David Sulzer
Pubbl/distr/stampa	New York, New York : , : Columbia University Press, , [2021] ©2021
ISBN	0231550502 9780231550505 0231193785 9780231193788
Descrizione fisica	1 online resource (310 pages) : illustrations
Disciplina	781.1
Soggetti	Musical perception Music - Acoustics and physics Music - Physiological aspects
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introductory of sound – The math of pitch, scales, and harmony – Waves and harmonics – The math of sound and resonance – Math and rhythmic structure – Brain mechanisms of rhythm – Neural mechanisms of emotion – Ear physiology: how air waves become sound – Deep brain physiology of sound – Sound disorders, illusions, and hallucinations – Animal sound, song, and music.
Sommario/riassunto	"Why does a clarinet play at lower pitches than a flute? What does it mean for sounds to be in or out of tune? How are emotions carried by music? Do other animals perceive sound like we do? How might a musician use math to come up with new ideas? This book offers a lively exploration of the mathematics, physics, and neuroscience that underlie music in a way that readers without scientific background can follow. David Sulzer, also known in the musical world as Dave Soldier, explains why the perception of music encompasses the physics of sound, the functions of the ear and deep-brain auditory pathways, and the physiology of emotion. He delves into topics such as the math by which musical scales, rhythms, tuning, and harmonies are derived,

from the days of Pythagoras to technological manipulation of sound waves. Sulzer ranges from styles from around the world to canonical composers to hip-hop, the history of experimental music, and animal sound by songbirds, cetaceans, bats, and insects. He makes accessible a vast range of material, helping readers discover the universal principles behind the music they find meaningful. Written for musicians and music lovers with any level of science and math proficiency, including none, Music, Math, and Mind demystifies how music works while testifying to its beauty and wonder." -- Publisher's description.