1.
Record Nr.	UNINA9910953886203321
Autore	Mitra Partha
Titolo	Observed brain dynamics / / Partha P. Mitra, Hemant Bokil
Pubbl/distr/stampa	Oxford ; ; New York, : Oxford University Press, c2008
ISBN	0-19-988436-6
	0-19-803963-8
	9786611374624
	1-281-37462-8
	1-4356-3359-8
Edizione	[1st ed.]
Descrizione fisica	1 online resource (xxii, 381 pages) : illustrations
Disciplina	612.8/2
Soggetti	Neural conduction - Mathematical models
	Brain - Mathematical models
	Brain - Physiology
	Neural networks (Neurobiology)
	Electroencephalography
	Neural Conduction - physiology
	Models, Theoretical
	Brain - physiology
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 (p. 349-361) and index.
Nota di contenuto	Contents; PART I: Conceptual Background; 1 Why Study Brain Dynamics?; 1.1 Why Dynamics? An Active Perspective; 1.2 Quantifying Dynamics: Shared Theoretical Instruments; 1.3 "Newtonian and Bergsonian Time"; 2 Theoretical Accounts of the Nervous System; 2.1 Three Axes in the Space of Theories; 3 Engineering Theories and Nervous System Function; 3.1 What Do Brains Do?; 3.2 Engineering Theories; 4 Methodological Considerations; 4.1 Conceptual Clarity and Valid Reasoning; 4.2 Nature of Scientific Method; PART II: Tutorials; 5 Mathematical Preliminaries; 5.1 Scalars: Real and Complex Variables Elementary Functions5.2 Vectors and Matrices: Linear Algebra; 5.3 Fourier Analysis; 5.4 Time Frequency Analysis; 5.5 Probability Theory; 5.6 Stochastic Processes; 6 Statistical Protocols; 6.1 Data Analysis

Sommario/riassunto	The biomedical sciences have recently undergone revolutionary change, due to the ability to digitize and store large data sets. In neuroscience, the data sources include measurements of neural activity measured using electrode arrays, EEG and MEG, brain imaging data from PET, fMRI, and optical imaging methods. Analysis, visualization, and management of these time series data sets is a growing field of research that has become increasingly important both for experimentalists and theorists interested in brain function. Written by investigators who have played an important role in developing the