



Principles of Magnetic Resonance Imaging: Physics Concepts, Pulse Sequences, Biomedical Applications

By Yi Wang Phd

Createspace Independent Publishing Platform, United States, 2012. Paperback. Book Condition: New. 254 x 198 mm. Language: English . Brand New Book ***** Print on Demand *****.Principles of Magnetic Resonance Imaging provides a contemporary introduction to the fundamental concepts of MRI and connects these concepts to the latest MRI developments. Graphic illustrations are used to visualize the complete solution to the Bloch Equation and to clarify underlying biophysical processes, simplified calculations and specific examples are used to add precision in appreciating abstract concepts, and insightful interpretations and clinical examples are presented to appreciate biomedical information in MRI signal. This book contains three parts: I. Section the body into voxels. Part I describes the Fourier encoding matrix for an imaging system, realization of Fourier encoding using the gradient field in magnetic resonance, and k-space sampling. II. What s in a voxel? Part II examines the effects of the biophysical processes in a voxel on MRI signal. A unified distributional evaluation of the phase factor in a voxel and intuitive biophysical models are developed for MRI signal dependence on Spin fluctuation in a thermal microenvironment, which leads to T1/T2 relaxation rates reflecting cellular contents in a water voxel. Micro- and macro physiological motion,...



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