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channel PC-MRA; References; 4 Numerical Simulation of PC-MRA; Abstract; 4.1 Flow Phantom Model; 4.1.1 Masking Function 4.2 Simulation of Magnetization Transport4.2.1 Lattice Boltzmann Method (LBM); 4.3 Simulation of MRI Signal Generation Using LBM and Bloch Equation; 4.3.1 Integration of LBM and Blochequation Simulation; 4.4 MRA Simulation Using Particle Trajectory Models; 4.5 Bloch Flow Equations; References; 5 Modeling of PC-MRA; Abstract; 5.1 An Overview of PC-MRA Modeling; 5.1.1 Partial Volume Effect; 5.2 Global Segmentation of Speed Images; 5.3 Initial Estimation of Mixture Parameters; 5.3.1 Iterated EM Algorithm; 5.3.2 Segmentation Using Local Phase Coherence; 5.3.3 Segmentation Using MRF Formulation 5.4 Vascular Tree Construction5.4.1 Skeletonization; References; Appendix

Sommario/riassunto

Providing many unique MATLAB codes and functions throughout, this book covers the basics of Magnetic Resonance Imaging (MRI), leading to an in-depth understanding of the concepts and tools required for analysis and interpretation of Phase Contrast MR Angiography (PC-MRA). The concept of PC-MRA is often difficult, but essential for practicing engineers and scientists working in MR related areas. The concepts are better understood by uniquely combining the physical principles of fluid flow and MR imaging, laid out by modeling the theory and applications using a commonly used software tool MATLAB®. The book starts with a detailed theory of PC-MRA followed by a description of various image processing methods, including detailed MATLAB codes used for their implementation. The flow concepts in the context of MR imaging are explained using MATLAB based simulations.