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   Nota di contenuto   Physical and Technical Background -- Image Reconstruction in MRI -- Overview of PatLoc Imaging and Presentation of Initial Hardware Designs -- Basics of Signal Encoding and Image Reconstruction in PatLoc Imaging -- Direct Reconstruction for Cartesian PatLoc Imaging -- Direct Reconstruction for Radial PatLoc Imaging -- Iterative Reconstruction in PatLoc Imaging -- Summary and Outlook.

   Sommario/riassunto   Within the past few decades magnetic resonance imaging has become one of the most important imaging modalities in medicine. For a reliable diagnosis of pathologies further technological improvements are of primary importance. This text deals with a radically new approach of image encoding: The fundamental principle of gradient linearity is challenged by investigating the possibilities of acquiring anatomical images with the help of nonlinear gradient fields. Besides a thorough theoretical analysis with a focus on signal encoding and image reconstruction, initial hardware implementations are tested using phantom as well as in-vivo measurements. Several applications are presented that give an impression about the implications that this technological advancement may have for future medical diagnostics.   Contents n Image Reconstruction in MRI n Nonlinear Gradient Encoding: PatLoc Imaging n Presentation of Initial Hardware Designs n Basics of Signal Encoding and Image Reconstruction in PatLoc Imaging n Direct and Iterative Reconstruction

Techniques   Target Groups ·   Researchers and students in the fields of physics, mathematics, medicine and engineering with interest in imaging technology. ·   Industrial practitioners with focus on medical imaging.   About the Author Gerrit Schultz studied Physics and Mathematics at the Universities of Heidelberg and Geneva. He joined the Medical Physics Group at the University Medical Center in Freiburg in 2007, where he is currently working as a postdoctoral researcher. .