FASTMAP: A user-friendly software package for efficient Bo shimming in magnetic resonance

Technology #cu17327

This technology is a software package that enables automatic Bo shimming for improved magnetic resonance imaging (MRI) and spectroscopy (MRS).

Unmet Need: Efficient method for correcting imperfections in the Bo field during magnetic imaging

Magnetic resonance imaging (MRI) and spectroscopy (MRS) allow unrivaled access to anatomy and physiology in a non-invasive fashion. However, both methods suffer from inherent imperfections in the Bo magnetic field that can result in signal distortion or dropout. As such, experimental homogenization of the Bo field, a process known as Bo shimming, is essential. While methods for Bo shimming exist, many are difficult to use or require extensive customization by the end user. As such, there is a need for an efficient, user-friendly method for Bo shimming that may be readily integrated into MRI systems.

The Technology: FASTMAP software package for reducing magnetic field imperfections in magnetic resonance imaging and spectroscopy

This technology is a software package that provides efficient first- and second-order Bo shimming for commercially-available magnetic resonance (MR) systems. This technology uses the FASTMAP method to derive Bo field information along six selected projections, producing significant time savings compared with Bo shimming techniques that require full 3-dimensional imaging. This technology is bundled into a user-friendly graphical user interface (GUI) software package that combines data processing, shim current calibration, and shim current adjustment. This technology may either be incorporated directly into commercial MRI scanners or may be implemented as a stand-alone software package for in-depth data analysis. By bundling the FASTMAP Bo shimming software into a user-friendly GUI software package, this technology provides a powerful tool for scientists and clinicians that require efficient Bo optimization.
Applications:

- Bo shimming for commercial MRI and MRS systems
- Magnetic field shimming for magnetic particle imaging (MPI) and magnetic resonance elastography (MRE) applications
- Stand-alone software package for in-depth data analysis

Advantages:

- Streamlined Bo shimming process
- Automated and unbiased analysis algorithm
- Compatible with existing MRI and MRS technology
- User-friendly graphical interface

Lead Inventor:

Christopher Juchem, Ph.D.

Related Publications:


Tech Ventures Reference:

- IR CU17327
- Licensing Contact: Joan Martinez

Inventors

Christoph Juchem