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Faster Functional and Diffusion MRI of the Brain (20110139, Dr. Kamil Ugurbil)

IP Status: Issued US Patent; **Application #:** 13/118,179

Combined Simultaneous Image Refocusing and Multiband Excitation

A new technology is an innovative combination of two independent data acquisition acceleration techniques: Simultaneous Image Refocusing (SIR) and Multiband excitation (MB) using multiple receiver coils. The new technology provides significantly faster functional and diffusion magnetic resonance imaging (MRI) of the brain and works on all modern MRI scanners.

Faster Brain Imaging

SIR and MB techniques on their own are each faster than conventional methods but face limitations at higher speeds. This new combined technique multiplies data acquisition speeds while avoiding the limitations of each technique separately and can image the brain seven times faster than current techniques—without sacrificing resolution. During testing, echo planar imaging (EPI) whole brain scan time at 3 and 7 Tesla showed marked reductions in time. Furthermore, the method did not sacrifice spatial resolution and even gained functional sensitivity.

BENEFITS AND FEATURES:

- 7x faster acquisition without sacrificing resolution
- May allow faster patient throughput
- May allow scans previously not possible due to extended length of scan times
- Additional features as needed

APPLICATIONS:

- MRI applications
- Brain imaging
- EPI
- Variety of MR imaging techniques
- Research, research institutions
- Medical imaging

Phase of Development - Pilot scale demonstration

Researchers

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Publications

Multiplexed Echo Planar Imaging for Sub-Second Whole Brain FMRI and Fast Diffusion Imaging

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Category
Engineering & Physical Sciences/MRI & Spectroscopy
Life Sciences/Diagnostics & Imaging
Life Sciences/Human Health
Life Sciences/MRI & Spectroscopy
Software & IT/Algorithms
Agriculture & Veterinary/Veterinary Medicine

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