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SENSE-optimized MRI RF Coil Design with Target Field Method

Tech ID: 18812 / UC Case 2005-616-0

BACKGROUND

In the past, people have used general-purpose MRI RF coil structures, which were not optimized for accelerated SENSE imaging technique. Therefore, SNR (signal-to-noise ratio) was not maximized for this particular technique. Several researchers have tested several basic RF coil designs and among the limited number of units tested, they picked the one with best performance. But none of the designs that were tested had been designed to minimize the geometry factor g of parallel imaging technique to maximize the signal-to-noise ratio. Therefore, this approach does not guarantee the best possible performance among all possible coil designs.

TECHNOLOGY DESCRIPTION

University researchers have developed a method that solves the inverse problem, where the best coil topography is calculated based on the performance criteria specified by the designer. Prior art uses basic coil geometries, such as circular or rectangular, whereas our coil structure can assume any arbitrary shape to get the best performance. The coil design criteria proposed begins with finding the current distribution on a prescribed surface that will maximize the signal-to-noise within the volume of interest. Therefore, the outcome will be the highest possible SNR among all possible coil designs.

APPLICATIONS

This invention will be used as a probe to image different body parts inside an MRI scanner. Although it can be used for standard imaging techniques, its advantages will be maximally utilized with parallel imaging techniques that are employed to accelerate image data collection without sacrificing spatial resolution. This invention will be used as an integral part of any MRI scanner and can be commercially sold as a standard or optional part for MRI systems.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	7,362,101	04/22/2008	2005-616

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OTHER INFORMATION

CATEGORIZED AS

- » **Imaging**
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