INTRINSIC NAVIGATION FROM VELOCITY-ENCODING GRADIENTS IN PHASE-CONTRAST MRI

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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,132,902	10/20/2018	2015-097

BRIEF DESCRIPTION

Time-resolved phase contrast MRI (4D flow) can quantify cardiac function and flow. The technique may even permit complex anatomical assessment, thus comprising a comprehensive exam in a single scan. Unfortunately, artifacts from respiratory motion compromise this ability. Therefore, we developed a simple method to measure motion using readily available navigation information from the velocity-encoding gradients without any significant modification to conventional sequences.

SUGGESTED USES

» Can be used in conjunction with any type of phase-contrast MR imaging scheme and any type of reconstruction strategy.

» Allows for high-quality images to be reconstructed from exams with long acquisition times and other types of exams that are sensitive to motion defects.

» Can be used for any part of the body that requires assessment using phase-contrast imaging. It is especially useful in cases when patients have difficulty holding still for long time periods.

» For longer scans (>1 min), breath-holds are no longer possible and respiratory motion must be considered. With the navigation technique, this imaging modality can be made accessible to a wider patient population.

ADVANTAGES

» In conventional phase-contrast sequences, no alterations to the sequence timing or gradient waveform are needed.

» Navigator information is available for every repetition time and is naturally synchronized to the acquired imaging data.

» For multi-direction phase-contrast imaging different navigators are available to describe multi-dimensional linear motion.

» In conjunction with a with a high-density multi-channel coil receiver, each coil element provides spatial localization to the navigator signals.

» The navigator measured can be used for motion compensation purposes or to prospectively gate the acquisition.

» The method can be used for any sampling strategy (both Cartesian and non-Cartesian).

RELATED MATERIALS

» Intrinsic Navigation from Velocity-Encoding Gradients in Phase-Contrast MRI - 12/07/2015

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ Method for Motion Sensing in MRI Using Preamplifier RF Intermodulation

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OTHER INFORMATION

KEYWORDS

healthcare, imaging, MRI

CATEGORIZED AS

» **Imaging**

» Medical

» **Medical**

» Imaging

RELATED CASES

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