FEATURES

Movement of the patient during a magnetic resonance imaging (MRI) scan is a serious problem that degrades the quality of the images. This is particularly true for functional MRI, which is used to map brain function, because hundreds of images of the same slice of brain are acquired over a long period of time. If the patient moves during the exam, the orientation of the image slice is affected. Typically, motion that occurred during the MRI exam is corrected using computer software during the processing of the data. However, through-plane motion cannot be retrospectively repaired. The ideal exam would include the ability to “track” the motion of the patient’s head during the MRI exam allowing the image to be acquired with the same anatomical orientation each time. The invention provides a method for tracking angular motion during an MRI scan. The motion of a patient during an MRI scan is corrected by acquiring nuclear magnetic resonance (NMR) spectra of a crystal attached to the patient and determining the orientation of the patient in the magnetic field. Correction information is then supplied to the spectrometer and the imaging pulse sequence of the MRI scan is adjusted to correct for the patient’s orientation. The main advantage of the invention is that the method operated independently of magnetic field gradients. Thus, the method does not interfere with MRI scans allowing real-time monitoring of the patient’s orientation. In addition, the invention utilizes hardware already available on most spectrometers and requires only one easy-to-make tuned coil with a single crystal.

BENEFITS

- Real-time monitoring/feedback – operates independently of magnetic field gradients.
- Inexpensive – makes use of hardware available on most spectrometers.
- Comfortable – operates without patient restraints.
- Fast and sensitive.

INTELLECTUAL PROPERTY STATUS

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