FREQUENCY PROGRAMMABLE MRI RECEIVE COIL

Tech ID: 33681 / UC Case 2025-013-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

In magnetic resonance imaging (MRI) scanners, the detection of nuclear magnetic resonance (NMR) signals is achieved using radiofrequency, or RF, coils. RF coils are often equivalently called “resonance coils” due to their circuitry being engineered for resonance at a single frequency being received, for low-noise voltage gain and performance. However, such coils are therefore limited to a small bandwidth around the center frequency, restricting MRI systems from imaging more than one type of nucleus at a time (typically just hydrogen-1, or H1), at one magnetic field strength.

To overcome the inherent restriction without sacrificing performance, UC Berkeley researchers have developed an MRI coil that can perform low-noise voltage gain at arbitrary relevant frequencies. These frequencies can be programmably chosen and can include magnetic resonance signals from any of various nuclei (e.g., 1H, 13C, 23Na, 31P, etc.), at any magnetic field strength (e.g., 50 mT, 1.5T, 3T, etc.). The multi-frequency resonance can be performed in a single system. The invention has further advantages in terms of resilience due to its decoupled response relative to other coils and system elements.

SUGGESTED USES

» Medical imaging, e.g., clinical magnetic resonance imaging (MRI)

ADVANTAGES

» Multi-frequency NMR signal detection, e.g., from various types of nuclei, by single RF coil

» Low-noise voltage gain and performance

» Resilient to system and environment changes

» Expands MRI imaging capabilities

RELATED MATERIALS

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OTHER INFORMATION

CATEGORIZED AS

» **Agriculture & Animal Science**
» Devices
» **Biotechnology**
» Health
» **Engineering**
» Engineering
» Other
» **Imaging**
» Medical
» Other
» **Medical**
» Devices
» Imaging
» Other
» Research Tools
» **Research Tools**
» Other
» **Sensors & Instrumentation**
» Other

RELATED CASES

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Methods And Use Of Activating Endogenous Ion Channels
- Multiphoton Magnetic Resonance Imaging

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