ANY-NUCLEI DISTRIBUTED ACTIVE PROGRAMMABLE TRANSMIT MRI COIL

Tech ID: 33305 / UC Case 2024-023-0

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2025/072121	04/03/2025	2024-023

BRIEF DESCRIPTION

There are 118 known elements. Nearly all of them have NMR active isotopes and at least 39 different nuclei have been shown to have biological relevance. Despite this, most of today's MRI is based on only one nucleus – 1H.

To work towards making use of all potential nuclei, here, UC Berkeley researchers have created a coil enabling the excitation of arbitrary nuclei in human-scale MRI with a single coil. To excite arbitrary nuclei, they developed a completely new type of RF coil, the Any-nuclei Distributed Active Programmable Transmit Coil (ADAPT Coil), that can operate at any relevant frequency. This coil eliminates the need of the expensive traditional RF amplifier by directly converting DC power into RF magnetic fields with frequencies chosen by digital control signals sent to the switches. Semiconductor switch imperfections are overcome by breaking the coil into several segments. The ADAPT Coil presents a scalable and efficient method of exciting arbitrary nuclei in human-scale MRI. This coil concept provides further opportunities for scaling, programmability, lowering coil costs, lowering dead-time, reducing multinuclear MRI workflow complexity, and enabling the study of dozens of biologically relevant nuclei.

SUGGESTED USES

» Magnetic Resonance Imaging

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Frequency Programmable MRI Receive Coil
- Tumor Infiltration Detection And Cell Density Mapping
- Multiphoton Magnetic Resonance Imaging

CONTACT

Sabrina N. David
sabrina.david@berkeley.edu
tel: .

INVENTORS

» Liu, Chunlei

OTHER INFORMATION

CATEGORIZED AS

» **Imaging**

» Medical

» **Medical**

» Imaging

RELATED CASES

2024-023-0