



Human Whole-Body Imaging at 7T (20120120, Dr. Tommy Vaughan)

IP Status: Issued US Patent; **Application #:** 14/508,920

Body Coils for Whole-Body MRI at 7T

A progressive series of five new coils make practical human cardiac magnetic resonance imaging (MRI) and spectroscopy (MRS) possible for the first time at 7T.

- The first coil solves problems of transmit-field inefficiency and inhomogeneity for heart and body imaging, with a close-fitting, 16-channel TEM conformal array design with efficient shield-capacitance decoupling.
- The second coil progresses directly from the first with automatic tuning and matching, an innovation of huge importance for multi-channel transmit coils.
- The third coil combines the second, auto-tuned multichannel transmitter with a 32-channel receiver for best transmit efficiency, control, receive sensitivity and parallel-imaging performance.
- The final two coils extend the innovative technology of the first three coils to multi-nuclear (^{31}P — ^1H) designs, making practical human cardiac imaging and spectroscopy possible for the first time at 7T.

Cardiac MRI Applications

MRI and MRS at 7T have great potential as tools for imaging and spectroscopic detection of cardiovascular diseases, yet there are currently no means available for practical 7T cardiac MRI and MRS. This new technology solves this problem by applying MR techniques to the heart.

BENEFITS AND FEATURES:

- Human cardiac MRI/MRS at 7T
- Close-fitting, 16-channel TEM conformal array design with efficient shield-capacitance decoupling
- Automatic tuning and matching
- Best transmit efficiency, control, receive sensitivity and parallel-imaging performance
- Applies MR techniques to the heart

APPLICATIONS:

- MRI
- Magnetic resonance spectroscopy
- Human whole-body imaging
- Cardiac imaging
- Transmitting and receiving radio-frequency signals suitable for MRI and/or MRS

Phase of Development - Proof of Concept

Researchers

Tommy Vaughan, PhD

Professor, Biomedical Engineering, Columbia University

Technology ID

20120120

Category

Engineering & Physical
Sciences/Instrumentation,
Sensors & Controls
Engineering & Physical
Sciences/MRI & Spectroscopy
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