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Basic Study

Cardiac functional magnetic resonance imaging at 7T: Image quality optimization and ultra-high field capabilities

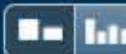
El-Sayed H Ibrahim, V Emre Arpinar, L Tugan Muftuler, Jadranka Stojanovska, Andrew S Nencka, Kevin M Koch

Abstract

BACKGROUND

7T cardiac magnetic resonance imaging (MRI) introduces several advantages, as well as some limitations, compared to lower-field imaging. The capabilities of ultra-high field (UHF) MRI have not been fully exploited in cardiac functional imaging.

Match Overview



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High-resolution functional MRI of the human amygdala at 7 T

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3629563>

Aug 22, 2011 · **Functional magnetic resonance imaging** (fMRI) has become the primary non-invasive method for investigating the human brain function. With an increasing number of **ultra-high field** MR systems worldwide possibilities of higher spatial and temporal resolution in combination with increased sensitivity and specificity are expected to advance detailed **imaging** ...

Cited by: 39

Author: Ronald Sladky, Pia Baldinger, Georg S. ...

Publish Year: 2013

Spinal cord MRI at 7T - PubMed Central (PMC)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5894871>

UHF MRI in humans was first reported at 8 Tesla in 1998 (Robitaille et al., 1998), and **functional magnetic resonance imaging** (fMRI) has been performed in the human brain **at 7T** since the turn of the century (Yacoub et al., 2001). Approximately 60 UHF systems for human **imaging** are now installed or planned worldwide.

Cited by: 17

Author: Robert L. Barry, S. Johanna Vannesjo, S...

Publish Year: 2017

Siemens Healthineers Magnetom Terra 7 Tesla MRI Scanner ...

<https://www.medicaldevice-network.com/projects/...> ▾

The Magnetom Terra 7 Tesla (7T) **magnetic resonance imaging** (MRI) scanner is an advanced **ultra-high-field** scanner developed by Siemens Healthineers. It is one of the first 7T MRI scanners cleared for clinical **imaging** in the US and Europe.

Advances in MR angiography with 7T MRI: From microvascular ...

<https://www.sciencedirect.com/science/article/pii/S1053811917300198>

Mar 01, 2018 · Introduction. **Magnetic resonance imaging** (MRI) relies on the intrinsic **magnetic** properties of body tissues and blood vessels within an external **magnetic field** to yield an **image** without injection of contrast agents or the application of ionizing radiation (Roberts and Mikulis,



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Whole brain high-resolution functional imaging at ultra ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3356778>

Aug 01, 2011 · **Ultra-high magnetic fields (7T and above)** allow **functional imaging** with high contrast-to-noise ratios and improved spatial resolution and spatial specificity compared to clinical fields (1.5T and 3T).

Cited by: 71

Author: Federico De Martino, Fabrizio Esposito, Pie...

Publish Year: 2011

Ultra-high field magnetic resonance imaging of the basal ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4220687>

Non-clinical MR scanners with **ultra-high magnetic field (7T or higher)** have the potential to improve the **quality** of these images. This technology report provides an overview of the current possibilities of visualizing deep brain stimulation targets and their related structures with the aid of **ultra-high field MRI**.

Cited by: 29

Author: Birgit R. Plantinga, Birgit R. Plantinga, Yasin...

Publish Year: 2014

Safety of Ultra-High Field MRI: What are the Specific ...

<https://link.springer.com/article/10.1007/s40134-014-0061-0> ▾

Jul 08, 2014 · There are currently more than 50 **ultra-high field (7 T and above)** MRI systems installed around the world. The vast majority of these perform studies on humans, whether healthy volunteers, volunteers for clinical research, or actual patients. The increased **magnetic field** strength potentially raises new safety concerns in the areas of the effects of the static **magnetic field** itself, increased ...

Cited by: 23

Author: Matthias J. P. van Osch, Andrew G. Webb

Publish Year: 2014

US20190365230A1 - Functional Magnetic Resonance Imaging ...

<https://patents.google.com/patent/US20190365230A1/en> ▾

This approach termed "3D T2prep-GRE," can be implemented with any **magnetic resonance imaging** machine, known to or conceivable by one of skill in the art. This approach is expected to be useful for **ultra-high field fMRI** studies that require whole brain coverage, or focus on regions near air cavities.

Cited by: 7

Author: Jun Hua, Craig Kenneth Jones, Qin Qin, Pet...

Publish Year: 2014

Boris KEIL | PhD | Technische Hochschule Mittelhessen ...

https://www.researchgate.net/profile/Boris_Keil

The main objective of this study was to utilize high field (7T) in vivo proton **magnetic resonance imaging** to increase the ability to detect metabolite changes in people with ALS, specifically, to ...



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[Safety of Ultra-High Field MRI: What are the Specific ...](#)

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