

The highlighted papers are those papers recognized by the reviewers as supporting MRM's goal of Reproducible Research.

## CONTENTS

### ■ LETTER TO THE EDITOR

**An inflated adiabatic  $T_{1\rho}$  by  $T_1$  relaxation in biological tissues,** Yuxi Pang .....444  
*Published online 22 April 2024*

### ■ SPECTROSCOPIC METHODOLOGY

#### Research Article

**TensorFit: A torch-based tool for ultrafast metabolite fitting of large MRSI data sets,** Federico Turco, Milena Capiglionni, Guodong Weng, and Johannes Slotboom .....447  
*Published online 12 March 2024*

### ■ PRECLINICAL AND CLINICAL SPECTROSCOPY

#### Technical Note

**Hyperpolarized  $^{15}\text{N}$  caffeine, a potential probe of liver function and perfusion,** Cornelius von Morze, Ashley Shaw, and Tyler Blazey .....459  
*Published online 12 March 2024*

### ■ IMAGING METHODOLOGY

#### Guidelines

**Recommendations for quantitative cerebral perfusion MRI using multi-timepoint arterial spin labeling: Acquisition, quantification, and clinical applications,** Joseph G. Woods, Eric Achten, Iris Asllani, Divya S. Bolar, Weiyang Dai, John A. Detre, Audrey P. Fan, Maria A. Fernández-Seara, Xavier Golay, Matthias Günther, Jia Guo, Luis Hernandez-Garcia, Mai-Lan Ho, Meher R. Juttukonda, Hanzhang Lu, Bradley J. MacIntosh, Ananth J. Madhuranthakam, Henk-Jan Mutsaerts, Thomas W. Okell, Laura M. Parkes, Nandor Pinter, Joana Pinto, Qin Qin, Marion Smits, Yuriko Suzuki, David L. Thomas, Matthias J. P. Van Osch, Danny J. J. Wang, Esther A. H. Warnert, Greg Zaharchuk, Fernando Zelaya, Moss Zhao, and Michael A. Chappell, on behalf of the ISMRM Perfusion Study Group .....469  
*Published online 09 April 2024*

#### Review

**Knowledge-driven deep learning for fast MR imaging: Undersampled MR image reconstruction from supervised to un-supervised learning,** Shanshan Wang, Ruoyou Wu, Sen Jia, Alou Diakite, Cheng Li, Qiegen Liu, Hairong Zheng, and Leslie Ying .....496  
*Published online 16 April 2024*

### Rapid Communications

**Robust multishot diffusion-weighted imaging of the abdomen with region-based shot rejection,** Philip K. Lee, Xuetong Zhou, and Brian A. Hargreaves.....519  
*Published online 16 April 2024*

**$B_1$  inhomogeneity corrected CEST MRI based on direct saturation removed omega plot model at 5T,** Qiting Wu, Pengcheng Gong, Shengping Liu, Ye Li, Dong Liang, Hairong Zheng, and Yin Wu .....532  
*Published online 22 April 2024*

### Research Articles

**Velocity-compensated intravoxel incoherent motion of the human calf muscle,** Christoph M. Stuprich, Martin Loh, Johannes T. Nemerth, Armin M. Nagel, Michael Uder, and Frederik B. Laun .....543  
*Published online 30 April 2024*

**Motion-compensated diffusion encoding in multi-shot human brain acquisitions: Insights using high-performance gradients,** Eric Seth Michael, Franciszek Hennel, and Klaas Paul Pruessmann .....556  
*Published online 05 March 2024*

**Pre-excitation gradients for eddy current nulled convex optimized diffusion encoding (Pre-ENCODE),** Matthew J. Middione, Michael Loecher, Xiaozhi Cao, Kawin Setsompop, and Daniel B. Ennis .....573  
*Published online 19 March 2024*

**Distortionless, free-breathing, and respiratory resolved 3D diffusion weighted imaging of the abdomen,** Philip K. Lee, Xuetong Zhou, Nan Wang, Ali B. Syed, Ryan L. Brunsing, Shreyas S. Vasanaawala, and Brian A. Hargreaves.....586  
*Published online 30 April 2024*

**Assessment of arterial pulsatility of cerebral perforating arteries using 7T high-resolution dual-VENC phase-contrast MRI,** Jianing Tang, Soroush Heidari Pahlavian, Elizabeth Joe, Maria Tereza Gamez, Tianrui Zhao, Samantha J. Ma, Jin Jin, Steven Yong Cen, Helena C. Chui, and Lirong Yan .....605  
*Published online 05 March 2024*

# CONTENTS

**GPU-accelerated Bloch simulations and MR-STAT reconstructions using the Julia programming language,** Oscar van der Heide, Cornelis A. T. van den Berg, and Alessandro Sbrizzi.....618  
*Published online 05 March 2024*

**A 3D dual-echo spiral sequence for simultaneous dynamic susceptibility contrast and dynamic contrast-enhanced MRI with single bolus injection,** Zhiqiang Li, Dinghui Wang, Melvyn B. Ooi, Poonam Choudhary, Sudarshan Ragunathan, John P. Karis, James G. Pipe, C. Chad Quarles, and Ashley M. Stokes .....631  
*Published online 12 March 2024*

**Intra-scan RF power amplifier drift correction,** Ali Aghaeifar, Dario Bosch, Rahel Heule, Sydney Williams, Philipp Ehses, Franck Mauconduit, and Klaus Scheffler .....645  
*Published online 12 March 2024*

**Compartmental anisotropy of filtered exchange imaging (FEXI) in human white matter: What is happening in FEXI?,** Hyeong-Geol Shin, Xu Li, Hye-Young Heo, Linda Knutsson, Filip Szczepankiewicz, Markus Nilsson, and Peter C. M. van Zijl.....660  
*Published online 25 March 2024*

**MR elastography-based slip interface imaging (SII) for functional assessment of myofascial interfaces: A feasibility study,** Emi Hojo, Yi Sui, Xiang Shan, Keni Zheng, Phillip Rossman, Armando Manduca, Garret M. Powell, Kai-Nan An, Kristin D. Zhao, Brent A. Bauer, Richard L. Ehman, and Ziying Yin.....676  
*Published online 25 March 2024*

**Highly-accelerated CEST MRI using frequency-offset-dependent k-space sampling and deep-learning reconstruction,** Chuyu Liu, Zhongsen Li, Zhensen Chen, Benqi Zhao, Zhuozhao Zheng, and Xiaolei Song .....688  
*Published online 16 April 2024*

**3D balanced SSFP UTE MRI for multiple contrasts whole brain imaging,** Xin Shen, Eduardo Caverzasi, Yang Yang, Xiaoxi Liu, Ari Green, Roland G. Henry, Uzay Emir, and Peder E. Z. Larson.....702  
*Published online 25 March 2024*

**In vivo T2 measurements of the fetal brain using single-shot fast spin echo sequences,** Suryava Bhattacharya, Anthony N. Price, Alena Uus, Helena S. Sousa, Massimo Marenzana, Kathleen Colford, Peter Murkin, Maggie Lee, Lucilio Cordero-Grande, Rui Pedro A. G. Teixeira, Shaihan J. Malik, and Maria Deprez.....715  
*Published online 16 April 2024*

## Technical Notes

**Tailored and universal parallel transmit broadband pulses for homogeneous 3D excitation of the human heart at 7T,** Christoph Stefan Aigner, Sebastian Dietrich-Conzelmann, Max Lutz, Felix Krüger, and Sebastian Schmitter.....730  
*Published online 05 March 2024*

**Repeatability of Open-MOLLI: An open-source inversion recovery myocardial T1 mapping sequence for fast prototyping,** Andreia S. Gaspar, Nuno A. Silva, António M. Ferreira, and Rita G. Nunes .....741  
*Published online 25 March 2024*

**Inline automatic quality control of 2D phase-contrast flow MRI for subject-specific scan time adaptation,** Pierre Daudé, Rajiv Ramasawmy, Ahsan Javed, Robert J. Lederman, Kelvin Chow, and Adrienne E. Campbell-Washburn.....751  
*Published online 12 March 2024*

**Direct angiographic comparison of different velocity-selective saturation, inversion, and DANTE labeling modules on cerebral arteries,** Dapeng Liu, Dan Zhu, and Qin Qin .....761  
*Published online 25 March 2024*

**A vendor-neutral EPI sequence for hyperpolarized <sup>13</sup>C MRI,** Tyler Blazey, Ashley Shaw, and Cornelius von Morze.....772  
*Published online 25 March 2024*

**Vessel-specific quantification of cerebral venous oxygenation with velocity-encoding preparation and rapid acquisition,** Zixuan Lin, Dengrong Jiang, Yiwen Hong, Yi Zhang, Yi-Cheng Hsu, Hanzhang Lu, and Dan Wu .....782  
*Published online 25 March 2024*

## PRECLINICAL AND CLINICAL IMAGING

### Research Articles

**Imaging of adeno-associated viral capsids for purposes of gene editing using CEST NMR/MRI,** Bonnie Lam, Mark Velasquez, Tomoko Ogiyama, Kevin Godines, Fan-Yun Szu, A. J. Velasquez-Mao, Wissam AlGhuraibawi, Jingshen Wang, Phillip B. Messersmith, and Moriel H. Vandsburger.....792  
*Published online 23 April 2024*

**Measuring CSF shunt flow with MRI using flow enhancement of signal intensity (FENSI),** Mingxiao Zhang, William C. Olivero, Jason M. Huston, Suguna Pappu, Paul M. Arnold, Arundhati Biswas, Aaron T. Anderson, and Bradley P. Sutton .....807  
*Published online 12 March 2024*

# CONTENTS

## ■ BIOPHYSICS AND BASIC BIOMEDICAL RESEARCH

### Research Article

- Genetic control of MRI contrast using the manganese transporter Zip14,** Harikrishna Rallapalli, Eleanor C. McCall, and Alan P. Koretsky..... 820  
*Published online 04 April 2024*

## ■ COMPUTER PROCESSING AND MODELING

### Research Articles

- Reproducibility of arterial spin labeling cerebral blood flow image processing: A report of the ISMRM open science initiative for perfusion imaging (OSIPI) and the ASL MRI challenge,** Andre M. Paschoal, Joseph G. Woods, Joana Pinto, Esther E. Bron, Jan Petr, Flora A. Kennedy McConnell, Laura Bell, Maria-Eleni Dounavi, Cassandra Gould van Praag, Henk J. M. M. Mutsaerts, Aaron Oliver Taylor, Moss Y. Zhao, Irène Brumer, Wei Siang Marcus Chan, Jack Toner, Jian Hu, Logan X. Zhang, Catarina Domingos, Sara P. Monteiro, Patricia Figueiredo, Alexander G. J. Harms, Beatriz E. Padrela, Channelle Tham, Ahmed Abdalle, Paula L. Croal, and Udunna Anazodo..... 836  
*Published online 19 March 2024*

## Accelerated motion correction with deep generative diffusion models,

- Brett Levac, Sidharth Kumar, Ajil Jalal, and Jonathan I. Tamir..... 853  
*Published online 30 April 2024*

## ■ HARDWARE AND INSTRUMENTATION

### Research Article

- Flexible metasurface for improving brain imaging at 7T,** Vladislav Koloskov, Wyger M. Brink, Andrew G. Webb, and Alena Shchelokova..... 869  
*Published online 12 March 2024*

## ■ ERRATUM

- Erratum to: Velocity-selective arterial spin labeling perfusion MRI: A review of the state of the art and recommendations for clinical implementation (Magn Reson Med. 2022; 88:1528–1547),** Qin Qin, David C. Alsop, Divya S. Bolar, Luis Hernandez-Garcia, James Meakin, Dapeng Liu, Krishna S. Nayak, Sophie Schmid, Matthias J. P. van Osch, Eric C. Wong, Joseph G. Woods, Greg Zaharchuk, Moss Y. Zhao, Zungho Zun, and Jia Guo..... 881  
*Published online 24 April 2024*