

Department of

Biomedical Engineering

Magnetic Resonance Physics & Methodology



Team: 10 Physicists & Engineers; 2 MTRA **Facility**: one 3T broadband whole body MRI system

Our research is in the fundamentals of magnetic resonance physics and in the development of new and dedicated MR methodology for application in the field of biophysical, biochemical, and clinical sciences.

We offer access to an MRI platform and MR expertise to a wide range of internal and external research groups (currently, we support about 40 external studies from UNIBAS, USB, UKBB, UPK).

We are interested in the translation of new methodology to clinical application.









Finite RF SSFP model of bSSFP. In (a) a Quasi-instantaneous RF excitation with alternating flip angle α is interleaved by free precession periods equal to TR (indicated in light gray). In (b), for finite RF pulses of duration $T_{\rm RF}$ (indicated in black), the free precession is reduced to TR = $T_{\rm RF}$. In (c), a finite α -pulse is proposed to be formally equivalent to two quasi-instantaneous $\alpha/2$ -pulses (indicated in black) separated by a free precession period of duration $T_{\rm RF}^* = \zeta T_{\rm RF}$ from the article by Bieri. (pp 422-431).

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POSTCONTRAST ufSSFP IMAGES (A), AND ufSSFP-SER IMAGES (B) IN A 58-YEAR-OLD FEMALE PATIENT WITH SCLERODERMA AND NSIP. FROM THE ARTICLE BY PUSTERLA ET AL. (PP 48–57)



ONE

ISMRM

EDITOR-IN-CHIEF Mark E. Schweitzer



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STREAMLINE REPRESENTATION OF BLOOD FLOW IN THE SUPERIOR SAGITTAL SINUS (RED ARROW) AND STRAIGHT SINUS (LIGHT BLUE ARROW), IN SAGITTAL (LEFT) AND OBLIQUE CORONAL (RIGHT) VIEWS. THE ANATOMICAL VARIANT OF THE SUBJECT, SHOWING THAT BLOOD FROM THE TWO SINUSES DOES NOT MIX, IS VISIBLE from the article by Santini et al (pp 966–974)



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Maximum intensity projections showing the pulmonary vasculature, taken from breath-hold thoracic images using a half-radial dual-echo balanced steady-state free precession sequence, from the article by Bauman and Bieri. (pp. 237–246).



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