

## Dear Z43 Partners, Friends, and Followers

Our biggest news from the last 3 months was the completion of the TIBS-R stimulation device for advanced temporal interference investigations. Also, we have released important new features of our systems. Enjoy reading and thanks for tuning in!

### WORKSHOP

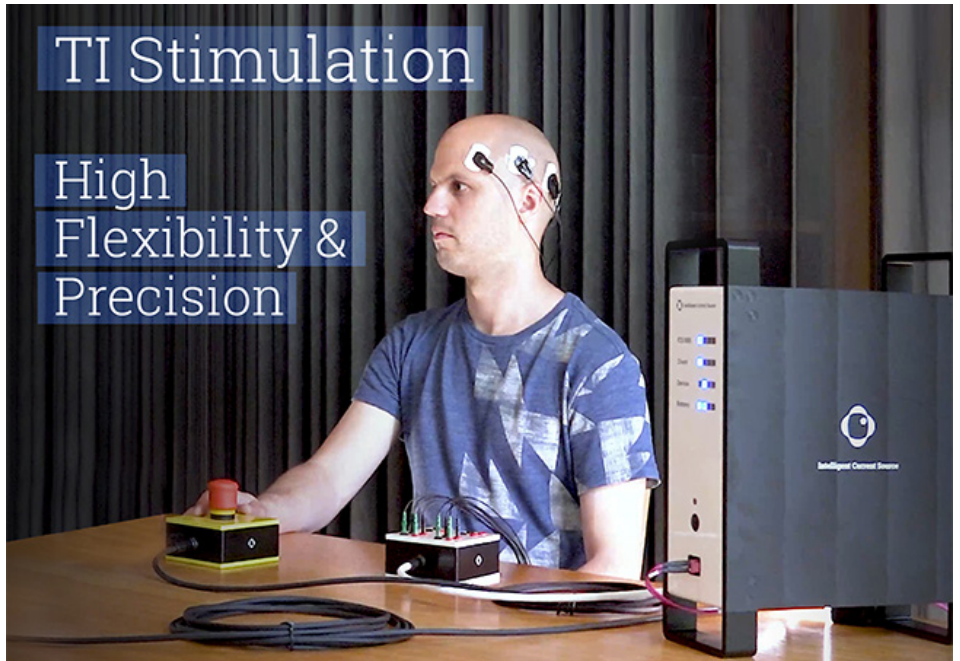
## ISMRM Sim4Life User Workshop 2022



From May 7 – 12, 2022, researchers and experts in the field of MRI gathered at the hybrid ISMRM-ESMRMB 2022 Joint Annual Meeting in London, UK. ZMT showcased several new features of Sim4Life and IMAnalytics, as well as the new benchtop Medical Implant Test System (MITS-TT), which provides fast and reliable transfer function validation for MRI safety assessment of implantable medical devices and features a compact table-top design. In addition, invited experts discussed critical aspects of patient safety and why coupling electromagnetic, thermal, and electrophysiological computational modeling and simulation with high-resolution functionalized anatomical models is key to success.

### TI SOLUTIONS

## New Technology for TI Research



After nearly two years of intense collaboration with the IT<sup>IS</sup> Foundation, [TI Solutions](#) has completed the development of its Temporal Interference Brain Stimulator for Research (TIBS-R) as well as a magnetic resonance imaging (MRI)-compatible version (TIBS-R-MRI), e.g., for fMRI investigations. Both variants consist of a battery-powered Intelligent Current Source, which has 8 fully differential channels capable of delivering high-precision current from DC to 100 kHz, that can be connected to any 3rd-party electrodes via an Electrode Connection Box. The device is controlled via the application programming interface sent by a PC via optical connections. The Intelligent Current Source and its external components make TIBS-R/TIBS-R-MRI the most flexible instrument for performing advanced temporal interference research. Check it out [here](#).

### MEASUREMENT

## DASY8/6 Module HAC V1.2



Simplified procedures, additional viewer options, and more for hearing aid compatibility (HAC) testing according to ANSI C63.19-2019: in the half year after the successful launch of the first version of our HAC module, DASY8/6 Module HAC V1.0, in November 2021, SPEAG has been working to further improve the features and workflow of the module in response to valuable customer feedback and suggestions for further improvements. Let us know what you think!

MEASUREMENT

## TAS Testing Without Special Tools

SPEAG has been working closely with chip manufacturers and regulators to provide a solution for using DASY8/6 to test devices that feature Dynamic Power Control – Exposure Time Averaging (DPC-ETA) algorithms without having to use tools provided by the device manufacturer. The procedure is described in a new application note. A user video that demonstrates how to follow the instructions in the application note shows how easy yet accurate time-averaged specific-absorption-rate evaluations can be – access it [here](#).



ANNUAL REPORTS

## IT'IS Annual Report 2021



IT'IS has released its key figures for the very successful year [2021](#).

INTERNATIONAL PROJECTS

## Eurostars OptiStim Kick-Off Meeting

In a collaborative effort to develop an effective therapy for chronic migraine and chronic cluster headache, team members from Z43 and Salvia BioElectronics B.V. met on 31 May 2022, to kick off the newly approved Eurostars project “OptiStim: Optimal Neurostimulation for the Treatment of Chronic Headaches”. For the project, Salvia will develop soft bioelectronic foils with flat electrodes, while Z43 will develop neurofunctionalized craniofacial models to use in *in silico* safety assessments. We look forward to an exciting collaboration!

MEASUREMENT

## IEC/IEEE: New Millimeter Wave Standards

IEC/IEEE have recently published the 63195-1 and 63195-2 standards for power density assessment in the 6 – 300 GHz frequency range, marking an important milestone for regulatory approval of 5G new radio frequency range 2 (5G NR FR2) devices. SPEAG products are already fully compatible with these standards requirements.

RESEARCH

## PUBLICATIONS

**Present Practice of Radiative Deep Hyperthermia in Combination with Radiotherapy in Switzerland** E. Stutz, et al. 2022, *Cancers*, Volume 14, Issue 5, Article No. 1175, doi: 10.3390/cancers14051175 (online: 24 February 2022)

**Oncologic Thermoradiotherapy: Need for Evidence, Harmonisation, and Innovation** S. Bodis, et al. 2022, *Cancers*, Volume 14, Issue 10, Article No. 2418, doi: 10.3390/cancers14102418 (online: 13 May 2022)

**Experimental Exposure Evaluation from the Very Close Near-to the Far-Field using a Multiple-Multipole Source Reconstruction Algorithm** K.S. Cujia, et al. 2022, *IEEE Transactions on Antennas and Propagation*, doi: 10.1109/TAP.2022.3177564 (online: 30 May 2022)

**Rapid SAR Optimization for Hyperthermic Oncology: Combining Multi-Goal Optimization and Time-Multiplexed Steering for Hotspot Suppression** R. Poni, et al. 2022, *International Journal of Hyperthermia*, Volume 39, Issue 1, pp. 758–771, doi: 10.1080/02656736.2022.2080284 (online 02 June 2022)

**Noninvasive Monitoring of Intracranial Pulse Waves** A. Spiegelberg, et al. 2022, *IEEE Transactions on Biomedical Engineering*, doi:10.1109/TBME.2022.3186748 (online 28 June 2022)

Z43 SOCIAL

## Trainee Stipend

Lena Kranold, postdoctoral researcher for applied medical electromagnetic research at IT'IS, received a trainee stipend to attend the ISMRM-ESMRMB 2022 Joint Annual Meeting in London in early May. At the meeting, she also represented us with her digital poster presentations on our ongoing work on MRI safety, which generated a lot of interest. Great work, Lena!

