

## Dear Z43 Partners, Friends, and Followers

Over the last few months, everyday life has almost come to a standstill, but it seems that the world is finally moving away from the pandemic a little and hopefully toward an amazing summer.

We've made it to 2021 with optimism and enthusiasm and continue to focus on pushing our projects and products so that we are prepared for the upcoming demands. A short summary of the recent highlights is presented below.

### MEASUREMENT

#### Pre-Release Note, MAGPy V1.0

We were thrilled to start 2021 with the announcement of a new product, MAGPy V1.0. This is the first handheld system that empowers users to demonstrate compliance with the dosimetric limits in the very close near field of wireless power transfer systems and other high-current industrial systems. MAGPy V1.0 integrates 27 miniaturized time-domain sensors and is far superior to any other instrument available on the market and fully compatible with the new IEC/IEEE63184 PAS. The system will be commercially released during the next quarter and demands are already high.



### VIRTUAL POPULATION

#### MARTIN V1.0 & ViP Hand Library V3.0



The Virtual Population (ViP) library has been extended by taking on 29-month-old toddler *MARTIN V1.0*, a new open-source whole-body computational model that was developed by the Athinoula A. Martinos Center for Biomedical Imaging at Massachusetts General Hospital, Boston, USA (see [corresponding paper](#)). In addition, IT'IS also released the ViP Hand Library V3.0 that has been developed to perform comprehensive compliance demonstration of small wireless power transfer systems.

### MEASUREMENT

#### cSAR3D V5.0: Real-Time SAR (0.3 s) from 300 MHz – 10 GHz



SPEAG has changed the world of dosimetric assessments of wireless communication devices again by launching the first real-time specific absorption rate (SAR) system. cSAR3D V5.0 can now acquire SAR measurements, reconstruct the induced fields in 3D and time average and determine the peak spatial SAR values averaged over both 1 gram and 10 grams three times per second – by far the fastest on the market. In addition, the frequency range has been extended from 300 MHz – 10 GHz and two advanced algorithms have been integrated to evaluate current and future time-averaging SAR management implementations.

If you have any questions, please contact us at [info@speag.swiss](mailto:info@speag.swiss).

## SIMULATION

### Sim4Life V6.2 & SEMCAD X V19.2



Significant improvements have been made to the user experience and much more.

Here's what's new in ZMT's Sim4Life V6.2 and SPEAG's SEMCAD X Matterhorn V19.2, SPEAG's specialized subpackage of Sim4Life for electromagnetics:

- the first neuro-functionalized animal model, NeuroRat V4.0, and neuromodeling that is more than 40 times faster than before (*Sim4Life only*)
- advanced standard-compatible mmWave features synchronized with DASY6/8 Module mmWave
- novel Huygens source feature allowing improved collaboration and IP protection of active and passive modules

Feedback, as always, is greatly welcome - we listen!

## RESEARCH

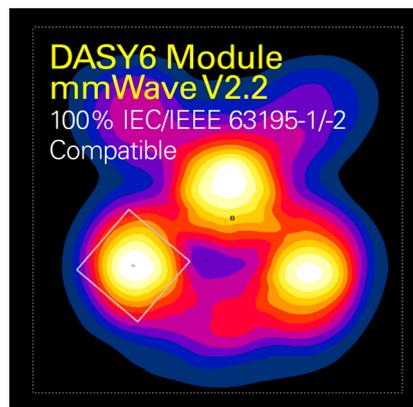
### NeuroRat V4.0 & MRI Mice V1.0

We released NeuroRat V4.0, the first computational anatomical model with detailed neuroanatomy that features peripheral nerve trajectories and a coregistered brain atlas model (Waxholm Space Atlas). The new posable and functionalized whole-body model was created as part of the  $\sigma^2S^2$ PARC project for neuro-electrophysiology simulations. In addition, IT'IS also released MRI Mice V1.0 – four new mouse models segmented de novo from whole-body magnetic resonance images.



## MEASUREMENT

### DASY6 Module mmWave V2.2: Ready for the Upcoming Standards



Another important release was DASY6 Module mmWave V2.2, which fulfills all of the requirements of the recently submitted draft IEC/IEEE 63195-1/-2 as well as all upcoming national regulations. In parallel, we have also released the MEO Option for compliance testing of MIMO antennas and the API Option for testing automatization above 6 GHz. Read more on our [website](#).

## RESEARCH

### PUBLICATIONS

#### **Towards Blood Flow in the Virtual Human: Efficient Self-Coupling of HemeLB**

J. W. S. McCullough, *et al.*, 2021, *Interface Focus*, 11(1), doi: 10.1098/rsfs.2019.0119 (online 11 December 2020)

#### **Non-invasive Suppression of Essential Tremor via Phase-Locked Disruption of its Temporal Coherence**

S. Schreglmann, *et al.*, 2021, *Nature Communications*, 12, 363, doi :10.1038/s41467-020-20581-7 (online 13 January 2021)

#### **Restoration of breathing after opioid overdose and spinal cord injury using temporal interference stimulation**

M. D. Sunshine, *et al.*, 2021, *Communications Biology*, 4, 107, doi: 10.1038/s42003-020-01604-x (online 25 January 2021)

#### **A Calibrated Physical Flow Standard for Medical Perfusion Imaging**

G. Kok, *et al.*, 2021, *Flow Measurement and Instrumentation*, 78, 101907, doi: 10.1016/j.flowmeasinst.2021.101907 (online 02 February 2021)

#### **Radio-frequency electromagnetic field exposure and contribution of sources in the general population: an organ-specific integrative exposure assessment.**

L. van Wel, *et al.*, 2021, *Journal of Exposure Science & Environmental Epidemiology*, doi: 10.1038/s41370-021-00287-8 (online 02 March 2021)

#### **Experimental and numerical optimization modelling to reduce radiofrequency-induced risks of magnetic resonance examinations on leaded implants**

J. Córcoles, *et al.*, 2021, *Applied Mathematical Modelling*, 96:177–188, doi: 10.1016/j.apm.2021.02.036 (online 09 March 2021)

#### **Computational and phantom-based feasibility study of 3D dcNCI with ultra-low field MRI**

N. Höfner, *et al.*, 2021, *Frontiers in Physics: Medical Physics and Imaging*, doi: 10.3389/fphy.2021.647376, *in press*

## Z43 SOCIAL

### Sweet Surprise

The only way to connect socially with our highly esteemed partners and customers is through delicious Swiss chocolates, which are literally being shipped while this Newsquarter is published.

